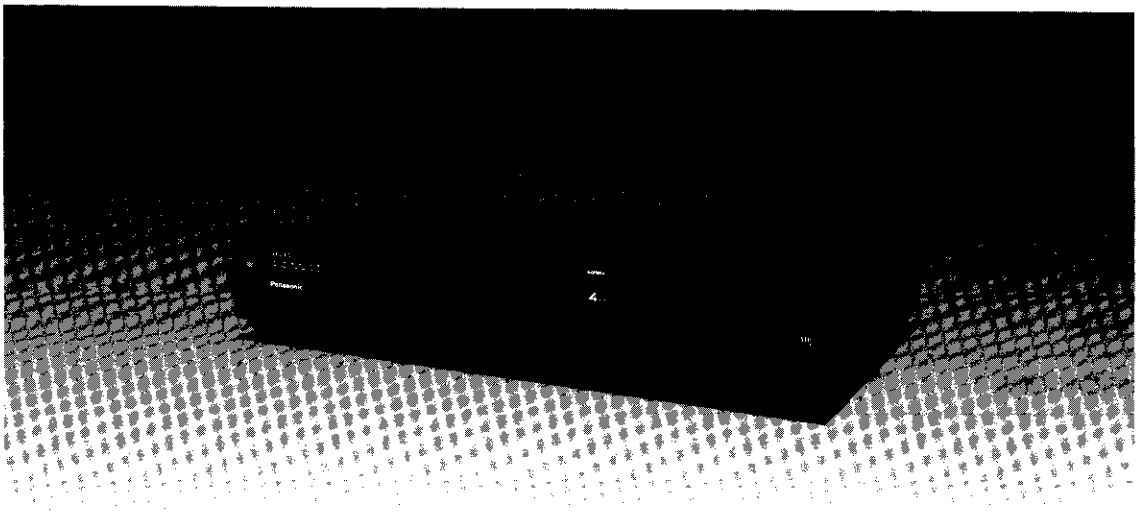
Operating Instructions

VHS PAL HQ DIGITAL

Video Cassette Recorder

NV-D48 Series



Panasonic

Before attempting to connect, operate or adjust this product, please read these instructions completely.

VQT2604

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IMPORTANT

Your attention is drawn to the fact that recording of pre-recorded tapes or discs or other published or broadcast material may infringe copyright laws.

WARNING

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

NV-D48A: Australian model
NV-D48EA: New Zealand model

FOR YOUR SAFETY

■ **DO NOT REMOVE OUTER COVER.**
To prevent electric shock, do not remove cover. No user serviceable parts inside. Refer servicing to qualified service personnel.

is the safety information.

FEATURES

1-Month Calendar Timer

The clock/timer of the VTR is programmed with the calendar up to the end of 2002, so it knows exactly what day of the week it is on any given date. Programming of as many as 8 timer recordings is possible up to one month in advance.

Auto Operation

The extremely convenient Auto Operation functions of this VTR include Auto Start and Auto Play when a recorded cassette is inserted, Auto Eject which indicates that an inserted cassette is not suitable for recording, VTR-Off Eject for ejecting a cassette even with the VTR off, and Auto Rewind at the end of a tape. If the VTR On/Off Switch is pressed during the rewind mode including Auto Rewind, the VTR will eject the cassette and turn itself off when rewinding is completed.

Super OTR Function (One-Touch Timer Recording)

This convenient function makes it possible to easily programme the VTR for recording of TV programmes with immediate start or with start within 24 hours by precisely setting the starting time and ending time to the desired minute. When the recording ends, the VTR will automatically turn itself off.

HQ (High Quality) Picture System

Video recorders carrying the HQ symbol mark feature the new VHS High Quality Picture System. This system assures complete compatibility with VTRs that use the conventional VHS system.

Lap Time Counter

The new Lap Time Counter is a great improvement over the approximate counter systems of conventional VTRs. It gives you an exact reading of the elapsed tape time in hours, minutes and seconds, and makes it easy to calculate the tape time left on a cassette.

Infra-red Remote Controller

The Infra-red Remote Controller unit allows operation of various functions from the comfort of your favourite viewing position.

LCD Digital Scanner

This Digital Scanner makes it posible to programme timer recordings by tracing the corresponding bar codes on the supplied Programming Sheet. The traced programming data can be confirmed on the built-in Bar Code Reader Display before they are transmitted to the VTR at the push of a button.

Time Search

It is possible to locate the desired scene directly by inputting the hour, minute and second of that scene.

Super Still, Super Still Advance and Double Super Fine Slow Playback

Super Still, Super Still Advance and Double Super Fine Slow Playback are possible with superb picture quality free from noise and jitter.

Slim Design and Front Loading System

This highly functional design allows loading the video cassette from the front, thus minimizing the space required for the placement.

Multi-Function Display

Whenever an operation button is pressed, the activated function is immediately indicated on this easy-to-see display. It shows you at a glance, in what operation mode the VTR is functioning.

Picture Sharpness Control

With this control, the contours of the playback picture can be made sharper or softer.

Digital Special Effect

The special digital picture effects can be enjoyed by using the Remote Controller.

VHS Index Search System

With the Index Search function, up to 20 addresses (places where an Index signal is recorded) can be skipped to directly locate the beginning of the desired programme in forward or reverse direction in the Fast Forward or Rewind mode.

Digital Intro Scan Function

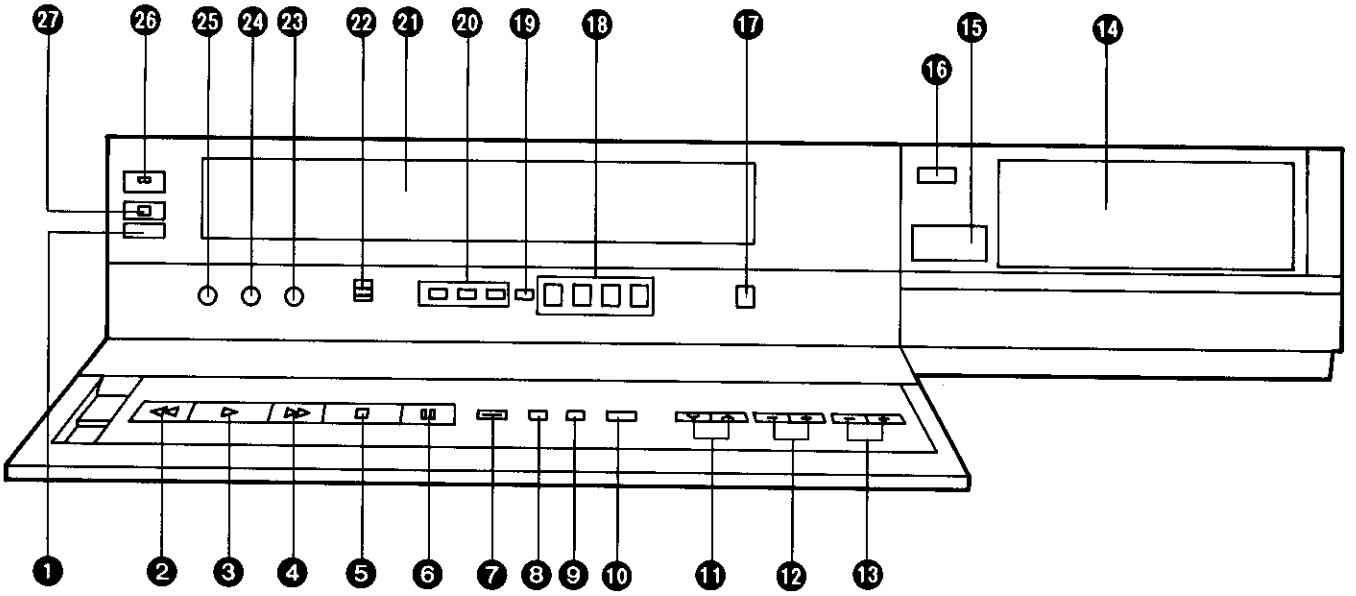
The Intro Scan function plays back one after another the first 10 seconds of each programme on a tape and keeps a still picture of the last 3 programmes on the right side of the screen. This is convenient for easy checking what programmes are on a tape and to quickly find a desired programme.

Reception of up to 32 TV Stations

The built-in tuner in this VTR allows pre-tuning of as many as 32 TV stations. So this VTR can accommodate virtually any increase in available TV programmes in the future.

CONTROLS AND COMPONENTS

FRONT



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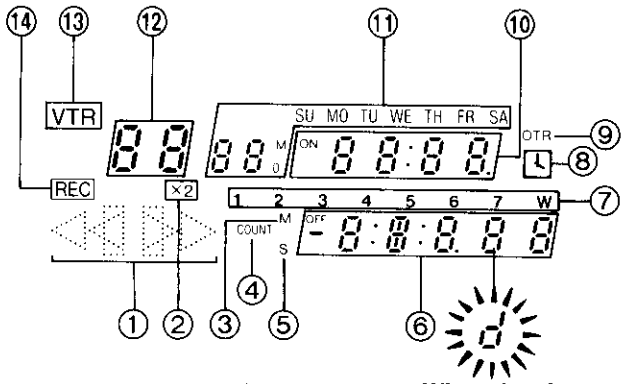
Multi-Function Display



When dew forms:
Dew Indicator

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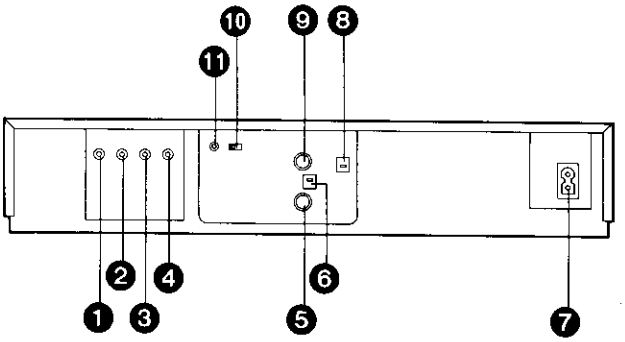
REAR



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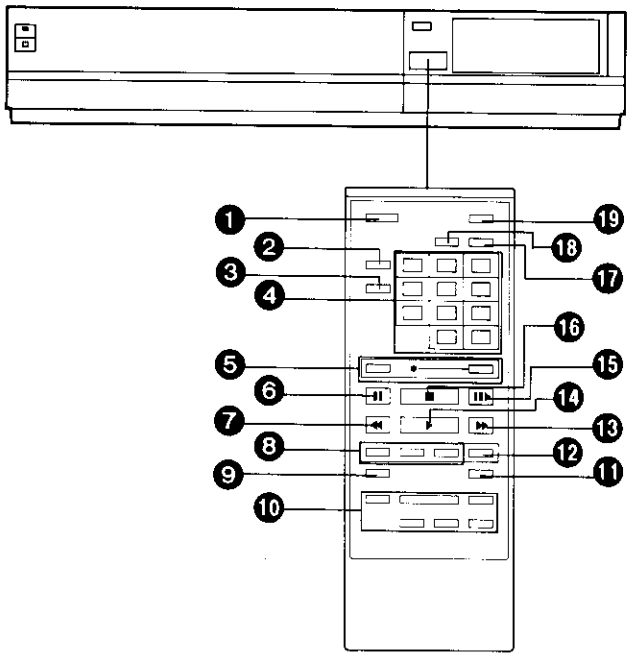
INFRA-RED REMOTE CONTROLLER AND DIGITAL SCANNER

Part Number: VEQ0719



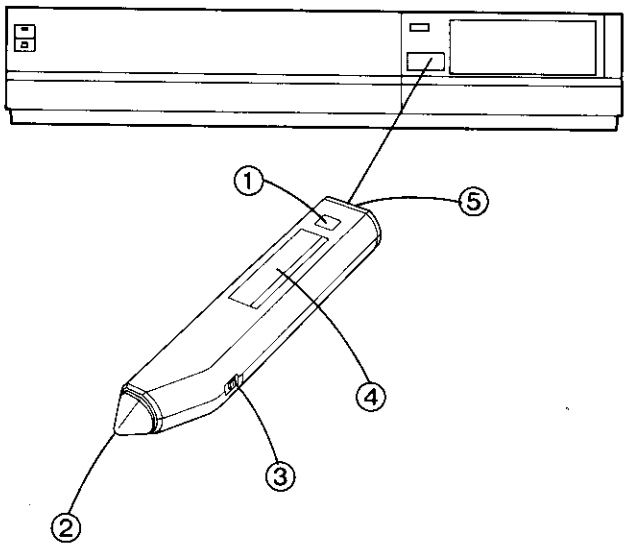
❶ **VTR On/Off Button**
❷ **Memory/Search Button**
❸ **Reset/Index Button**
❹ **Programme Position (Channel) Selector Buttons**

select channel	press button
1–9	[1]–[9] respective channel
10	[0/10]
20	[-/--]→[2]→[0/10]
11–32 for example 32	[-/--]→[3]→[2]

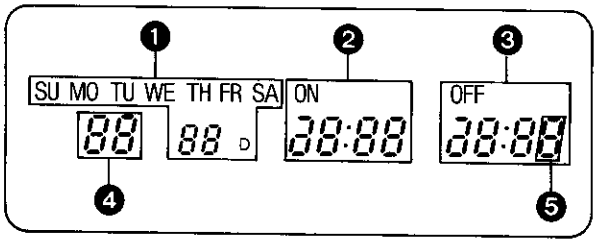
If more than 5 seconds pass between the first, second and third push, the channel will not be changed normally.

❺ **Record Buttons (●)**
❻ **Pause/Still Button (❚❚)**
❼ **Rewind ◀◀/Review [◀◀] Button**
❽ **Slow Buttons**
❾ **Reverse Play Button**
❿ **Digital Function Buttons**
⓫ **Intro Scan Button**
⓬ **Double Speed Playback Button (×2)**
⓭ **Fast Forward ▶▶/Cue [▶▶] Button**
⓮ **Play Button (▶)**
⓯ **Still Advance Button (❚▶)**
⓰ **Stop Button (■)**
⓱ **Time Search Button**
⓲ **+/– Button**
⓳ **VTR/TV Selector**

Part Number: VEQ0692



① **Transmit Button**
② **Bar Code Reading Section**
③ **Digital Scanner On/Off Switch**
④ **Bar Code Reader Display**



❶ Date Display
❷ Start Time Display
❸ End Time Display
❹ Channel Display
❺ Check Indicator

⑤ **Transmitting Section**

How to Operate the Digital Scanner

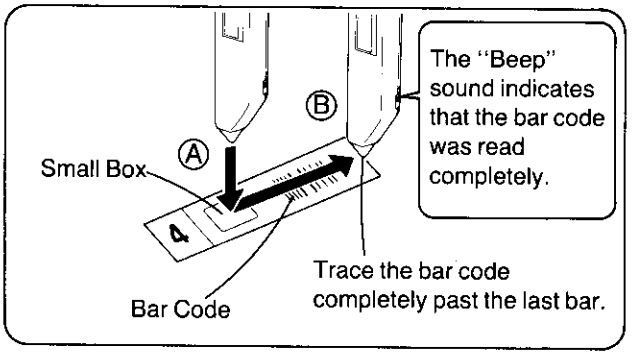
Set the Digital Scanner On/Off Switch to "ON".

- If no operation is performed for more than 25 seconds, the scanner will automatically switch over to the power-saving standby condition and the lamp will go off. (In this case, if bar codes have already been read but not yet transmitted to the VTR, the data will be cancelled.)
- When the Digital Scanner On/Off Switch is set to "ON" but the lamp is not lit, set the switch to "OFF" and then to "ON" again.

Tracing the Bar Codes

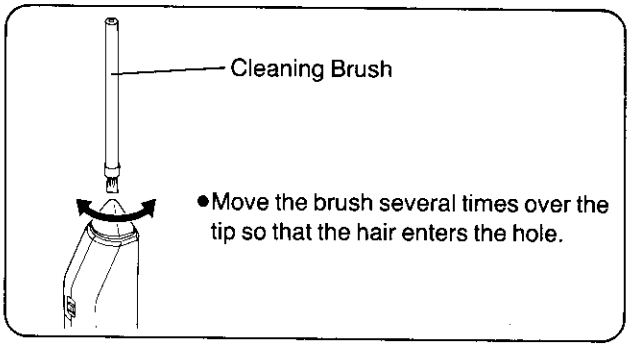
Ⓐ Place the digital Scanner vertically on the Small Box.

Ⓑ Trace the bar code quickly in the direction of the arrow.



Cleaning Brush for the Digital Scanner

If the sensor in the tip of the Digital Scanner becomes clogged with dirt, it may become impossible to read the bar codes. Clean the tip from time to time with the supplied brush as illustrated below.
Keep this brush in the storage case of the Digital Scanner.



- Treat the Programming Sheet with care. If the sheet gets dirty or scratched, the bar code reading may become impossible.
- Protect the Digital Scanner from strong shocks and vibration. Keep it away from water and places with high temperature and humidity.
- If the bar code is traced slowly, it cannot be read correctly.
- When there is no "Beep" sound, the reading of the bar code is incomplete. Trace the bar code again.
- When using the Programming Sheet, put it on flat surface. Reading the bar codes while holding it in your hand or bending it, may result in incorrect operation.
- Do not deviate from the bar code, nor stop tracing halfway.
- Do not slant the scanner to trace the bar code.

Power Source for the Remote Controller (Digital Scanner)

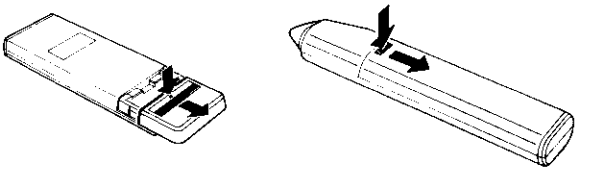
■ The Remote Controller is powered by two IEC "R6" (Digital Scanner: 4 IEC "R03") size batteries. The life of the batteries is about one year, however, it depends on the frequency of use. Inspect and if necessary, replace the batteries once a year.

CAUTION FOR BATTERY REPLACEMENT

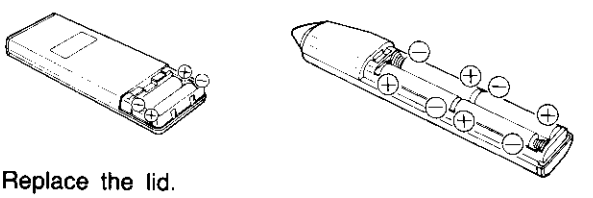
- Load the new batteries with their polarities (⊕ and ⊖) aligned correctly.
- Do not apply heat to batteries, or internal short-circuit may occur.
- If you do not intend to use the Remote Controller or Digital Scanner for a long period of time, remove the batteries and store them in a cool and dry place.
- Remove spent batteries immediately and dispose of them.
- Do not use an old and a new batteries together. (Also never use an alkaline battery with a manganese battery.)

Load the batteries as follows:

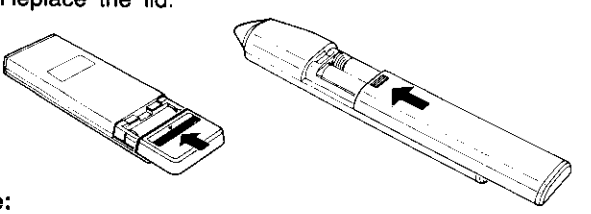
❶ Remove the battery compartment lid.



❷ Place two batteries in the battery compartment as indicated inside the battery compartment.



❸ Replace the lid.



Note:

- The infra-red beam should be transmitted directly at the Infra-red Remote Control Receiver on the front of the VTR.
- Direct sunlight may interfere with the beam.
- The lightsensing angle of the Infra-red Remote Control Receiver window in the VTR is about 30° for each side from the centre.
- The unit should be used within a range of about 7 meters from the front of the VTR.

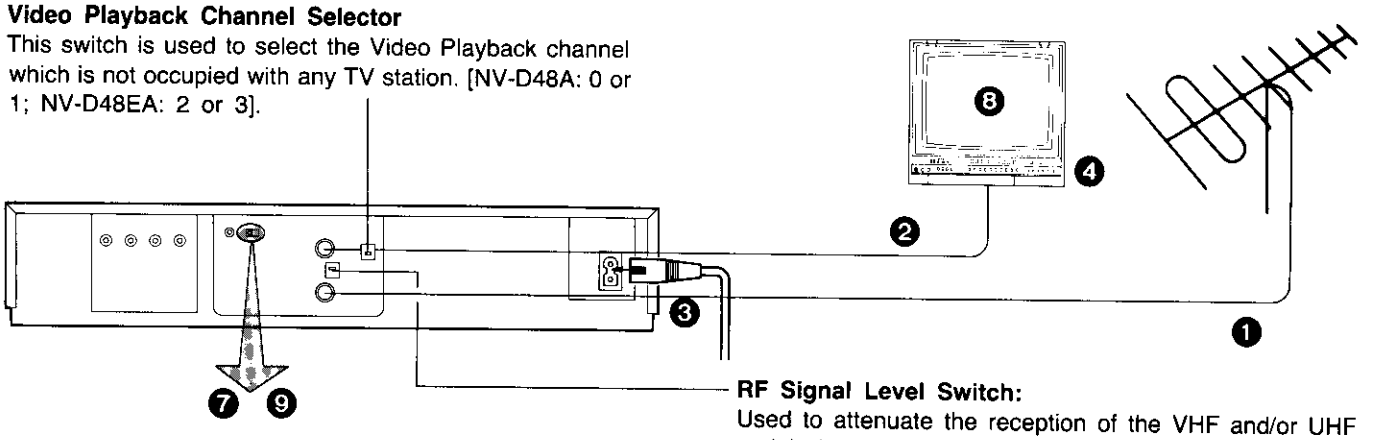
Recommendation

To save battery power, make sure to set the Digital Scanner On/Off Switch to "OFF" after using the Digital Scanner. When the batteries are exhausted, the bar code reading can no longer be performed.

INSTALLATION, TUNING THE TV SET TO THE VIDEO PLAYBACK CHANNEL

NV-D48A:
FOR YOUR SAFETY
Install any external aerial to AS 1417.1.

Video Playback Channel Selector
This switch is used to select the Video Playback channel which is not occupied with any TV station. [NV-D48A: 0 or 1; NV-D48EA: 2 or 3].



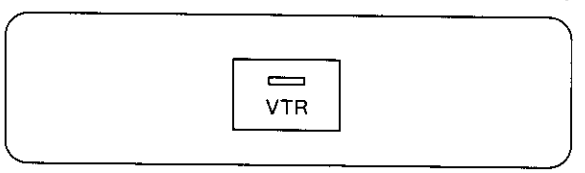
RF Signal Level Switch:
Used to attenuate the reception of the VHF and/or UHF aerial signals.
If the reception is normal, set to "HIGH". If the signal is strong (stripes appear in the upper part of the picture), set to "LOW".

Connection to a TV Set

1. Connect the external aerial to the RF Input Socket on the VTR.
2. Connect the aerial terminal on your TV set to the RF Output Socket on the VTR with the supplied DIN-DIN Coaxial Cable.
3. Connect the AC Mains Lead to the AC Mains Socket of the VTR to the mains outlet.

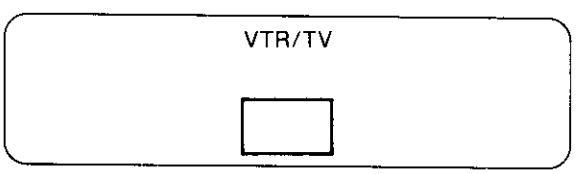
Video Playback Channel

4. Turn the TV set on.
5. Press the VTR On/Off Switch to turn the VTR On.
(FRONT SIDE)



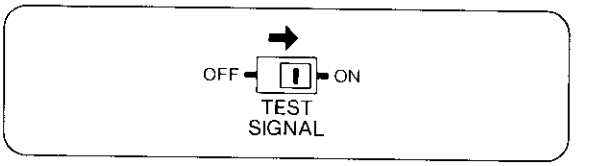
- The corresponding indicator lights up.

6. Set the VTR/TV Selector Switch to "VTR".
(FRONT SIDE)



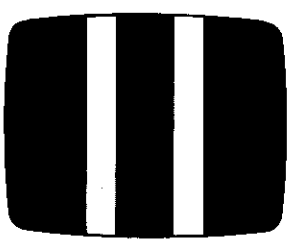
- VTR Mode Indicator will appear in the Multi-Function Display.

7. Set the Test Signal Switch to "ON".



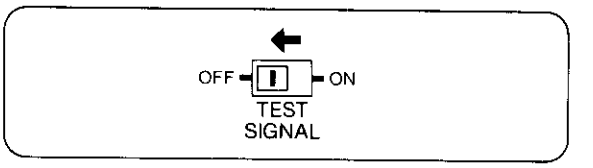
8. Tune the selected programme position (channel) of the TV set to the VHF channel shown below for your model. Confirm on the TV set that the received test pattern is as shown below.

NV-D48A	VHF channel 0 or 1*
NV-D48EA	VHF channel 2 or 3



NV-D48A only
*In some areas channel 0 may be used by local TV station. In this case switch to channel 1.

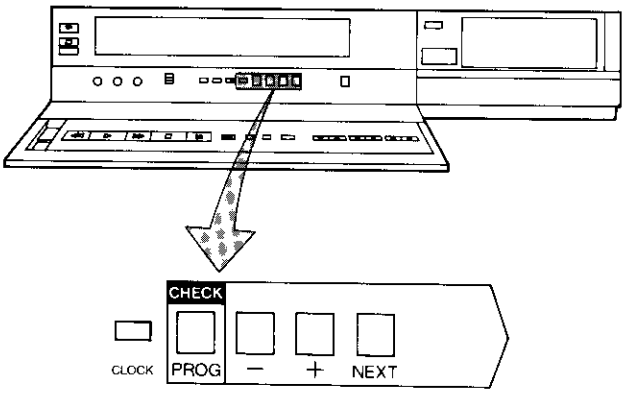
9. Set the Text Signal Switch to "OFF". Your TV is now ready to receive the RF output signal from the VTR.



10. To check, play back a pre-recorded tape and readjust fine tuning of TV if necessary.

SETTING THE CLOCK TO THE PRESENT TIME

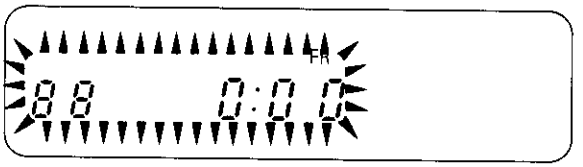
The built-in digital clock employs the 24-hour system.



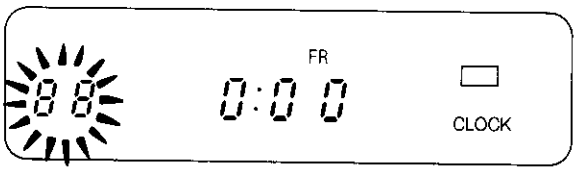
For Example: Set the clock for Sunday, October 10, 1999, 9:10.

- Connect the VTR to the mains outlet.
- Press the VTR On/Off Switch to turn the VTR On.

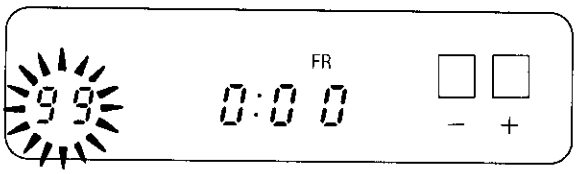
❶ When connecting this VTR to the mains or after a long power failure, both the date and time indications flash.



❷ Press the Clock Button to start the date and time setting.

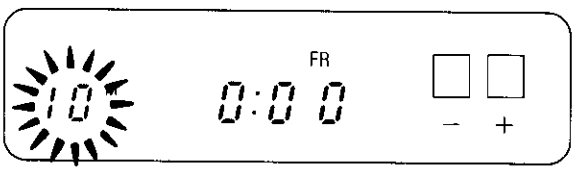


❸ Press the "+" or "–" Button to set the year.



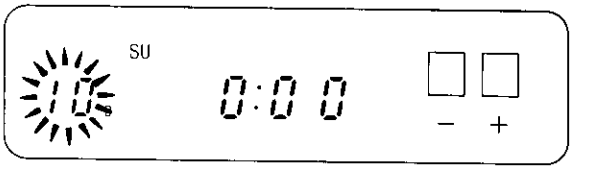
❹ Press the Next Button.

❺ Press the "+" or "–" Button to set the month.



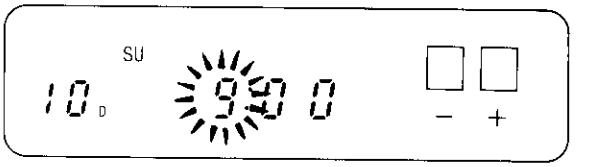
❻ Press the Next Button.

❼ Press the "+" or "–" Button to set the date.



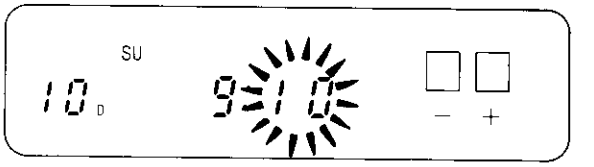
❽ Press the Next Button.

❾ Press the "+" or "–" Button to set the hour.

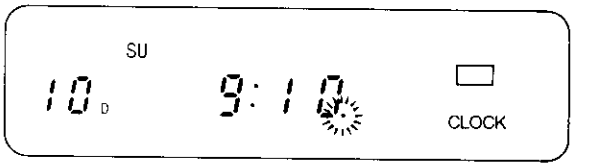


❿ Press the Next Button.

⓫ Press the "+" or "–" Button to set the minute.



⓬ Press the Clock Button when the present time becomes exactly 9:10'00".



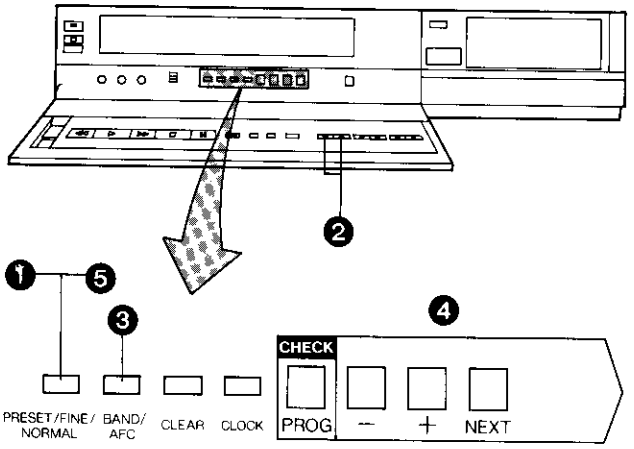
At every push of the Next Button, the flashing indication changes in the following order.

YEAR→MONTH→DATE→HOUR→MINUTE

- The timer back-up system maintains the clock operation for about 60 minutes in case of a power failure. However, it takes more than 60 minutes for the back-up circuit to become operational, after the VTR is conhected to the mains.
- The Timer Record Function should be set to "Off", otherwise the VTR cannot be operated normally. In this case, the Timer Record Indicator "⊡" will flash to warn you.
- During date setting, the corresponding day is simultaneously set.

SETTING THE TUNER IN THE VTR

The tuner in the VTR makes it possible to receive TV broadcasts and to record these programmes without having to turn on the TV set.



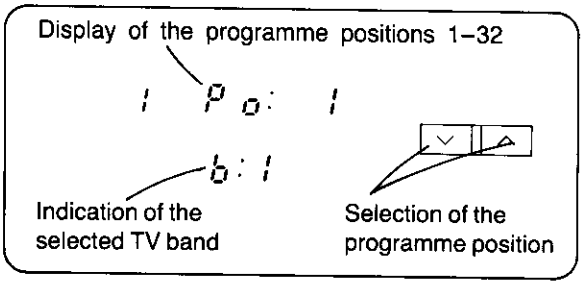
Preparation

- Turn the TV set on and select the programme position (channel) which you have tuned to the video playback channel.
- Press the VTR On/Off Switch to turn the VTR on.
- Press the VTR/TV Selector to "VTR" position.

❶ Press the Preset/Fine/Normal Button.
The indication on the Multi-Function Display changes from the clock indication to the position indication.

❷ Press the Channel Up or Down Button to select a programme position (channel) which you want to tune to a TV station.

❸ Press the Band/AFC Button to select the "I", "III" or "U" position.

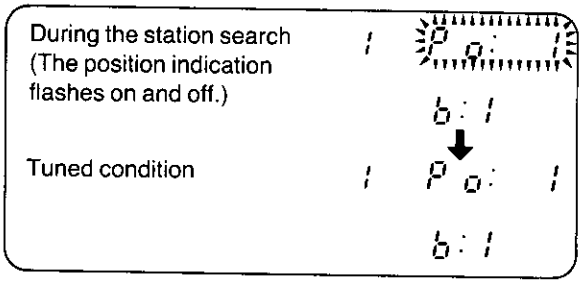


	VHF		UHF
	I	III	U
NV-D48A	0–5	5A–11	21–69
NV-D48EA	1–3	4–11	21–69

The tuner in the VTR can be preset with up to 32 stations.

❹ Press the "+" or "–" Button until the picture of the desired station on your TV is satisfactory.

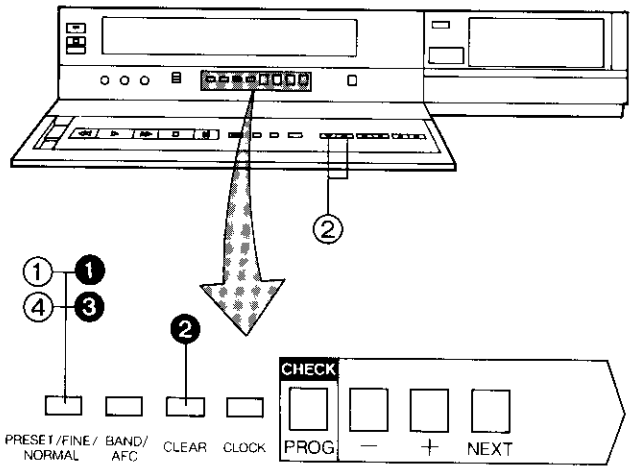
- If the "+" or "–" Button is pressed while pressing the Next Button, the stations will change quickly.



- The tuned station is automatically memorized.

Repeat steps ❷–❹ for each channel you want to tune to a station.

❺ Press the Preset/Fine/Normal Button twice.
The indication on the Multi-Function Display changes to the clock indication.

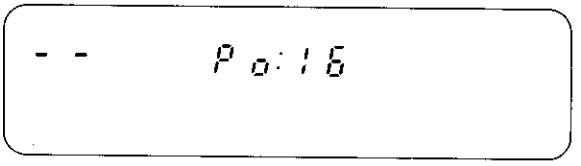


Blanking of Unoccupied Programme Positions

① Press the Preset/Fine/Normal Button.

② Press the Channel Up or Down Button to select a programme position (channel) which you do not want to tune to a TV station.

③ Press the Clear Button ("– –" will be displayed in the Programme Position Indication).



- Repeat steps ② and ③ for any programme positions on which no stations are to be tuned. Afterwards, these programme positions will be skipped during Up/Down selection of the programme position.

④ Press the Preset/Fine/Normal Button twice.

Cancelling the Clear Function (Blanking)

❶ Press the Preset/Fine/Normal Button.

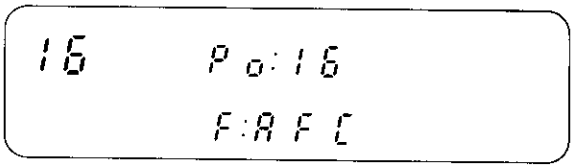
❷ To cancel the blanking of a programme position, select that programme position on the VTR and then press the Clear Button.

❸ Press the Preset/Fine/Normal Button twice.

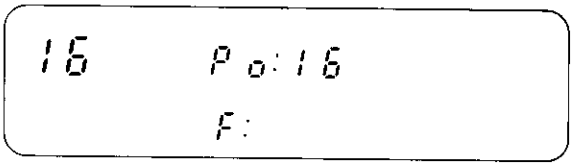
Fine Tuning Procedure

If fine tuning is necessary, for example for a weak station which is close to a strong station:

1. Press the Preset/Fine/Normal Button twice.



2. Press the "+" or "–" Button to obtain the best tuning condition.

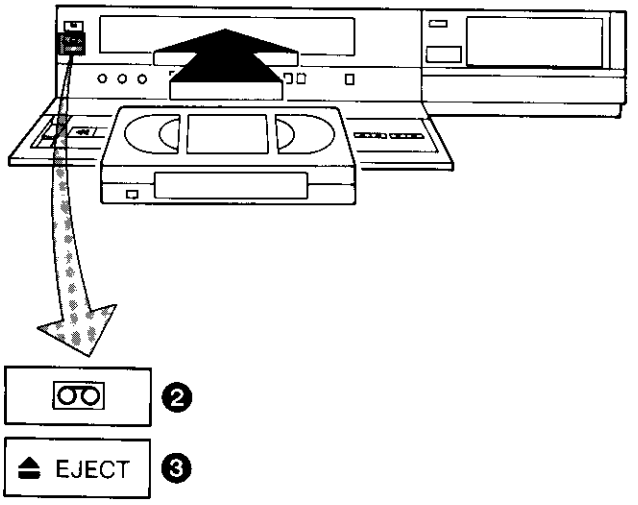


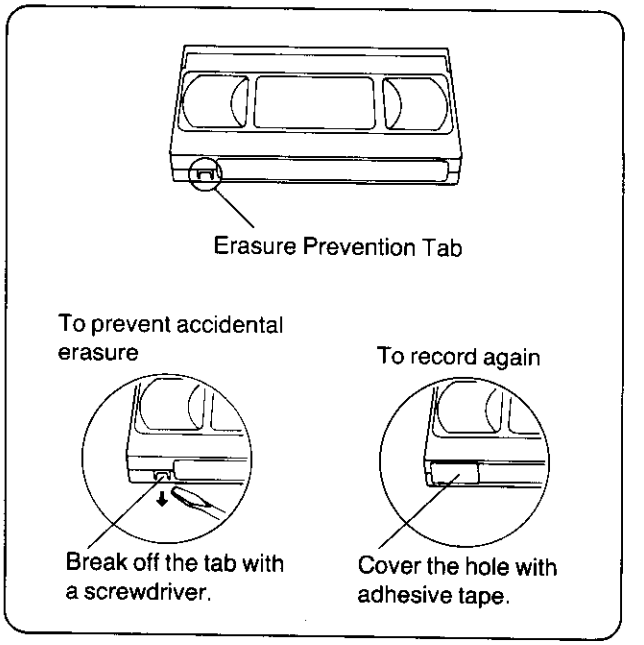
- "AFC" Indicator will not be displayed.

- To return the tuning to its former state, press the Band/AFC Button.

3. Press the Preset/Fine/Normal Button.

THE VIDEO CASSETTE





Inserting a Video Cassette (Auto Operation)

❶ Insert the video cassette as shown. The VTR will be turned on automatically and the cassette will be automatically drawn into the VTR.

❷ When a video cassette is inserted, the "" mark will appear.

Notes:

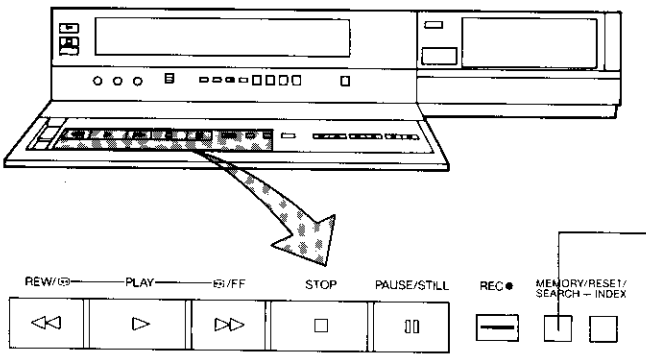
- When a video cassette with broken out erasure prevention tab (for example a pre-recorded tape) is inserted, playback will start immediately.
- Use VHS video cassette tapes only.

Removing a Video Cassette

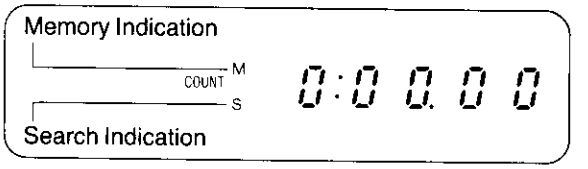
❸ Press the Eject Button (⏏).

Simply press the Eject Button; the VTR turns itself on, ejects the cassette and turns itself off again.

PLAYBACK



Memory/Search Button
Repeatedly pressing this button will change the indication in the following order: "M" (Memory) → "S" (Search) → both indications are off → "M"...



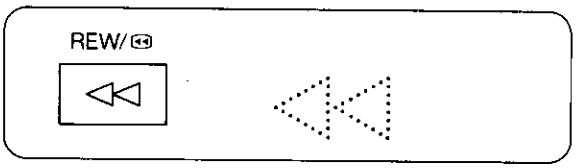
Preparation
- Make sure that the Timer Record Function is set to "Off".
- Insert a recorded video cassette.
  When a video cassette is already inside the VTR, press the VTR On/Off Switch to turn it on.
- Turn the TV set on and select the video playback channel.
- Make sure that the Edit Switch is set to "Off".

Auto Operation

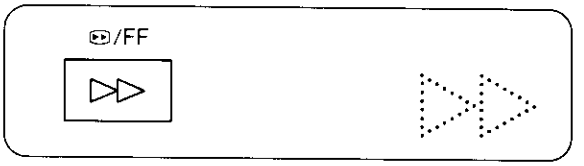
When a video cassette which has the erasure prevention tab removed is inserted, playback will start automatically. If nothing is recorded on the part of the tape where playback is started, the VTR will automatically be in the Cue playback mode until the recorded part is reached, then it changes back to normal playback mode.
- When the Multi-Function Display has the Search Indicator lit, the Cue playback will continue to operate, even after the recorded part is reached. For normal playback, press the Play Button.

Rewind and Fast Forward

Press the Rewind ◀◀/Review ⏪ Button to rewind the tape.

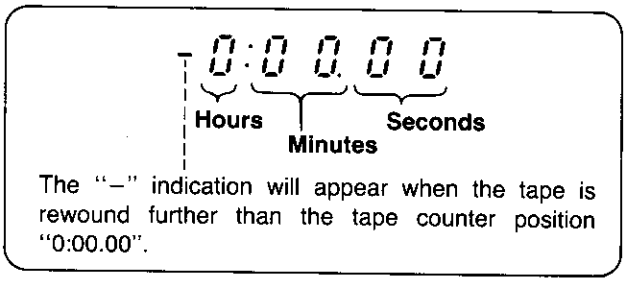


Press the Fast Forward ▶▶/Cue ⏩ Button to wind the tape forward rapidly.



Lap Time Counter

It shows the elapsed recording or playback time.



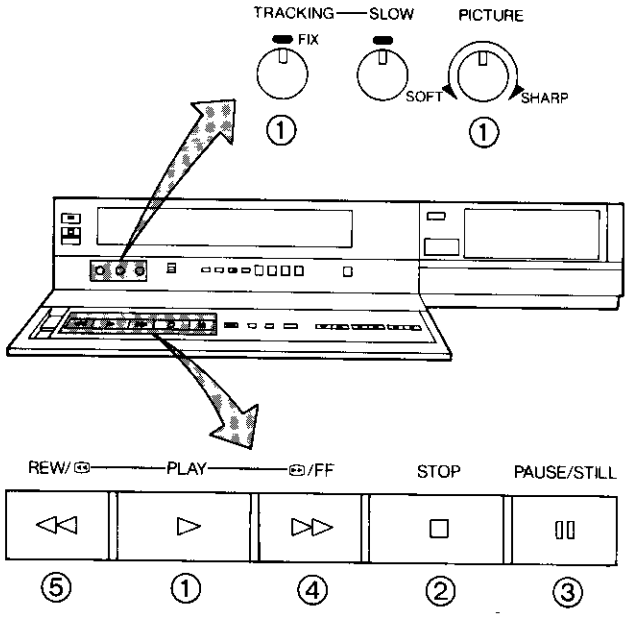
The "–" indication will appear when the tape is rewound further than the tape counter position "0:00.00".

- If the figures on the Tape Counter do not change during Fast Forward, Rewind or any of the Playback functions, this means that nothing is recorded on that tape section.
- The Tape Counter is automatically reset to "0:00.00" when the video cassette is ejected.

Memory Function

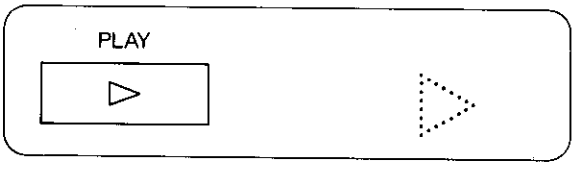
The Memory function makes it simple and fast to find a certain position on the tape later again, simply by pressing the Reset/Index Button at that position to set the tape counter to "0:00.00" and by pressing the Memory/Search Button. During Rewind or Fast Forward, the tape will then stop at approximately the desired position.

PLAYBACK (CONT'D)



① Normal Playback

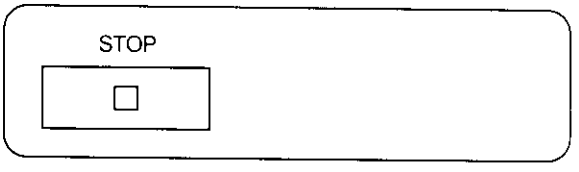
Press the Play Button (▶).



- Adjust the Tracking Control on the VTR if the image is partially obscured by bands of noise.
- Control the picture as you like with the Picture Sharpness Control (sharp or soft contours).

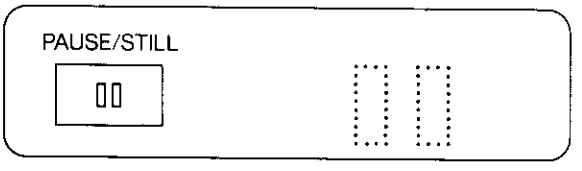
② To Finish Playback

Press the Stop Button (■) to stop the playback.



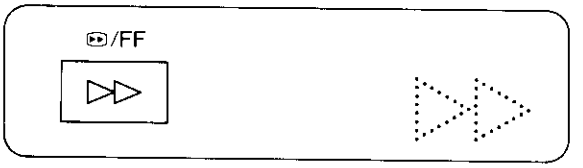
③ Super Still Playback

When the VTR is in the playback mode, press the Pause/Still Button (❚❚) to view a still-picture. To continue the normal playback, press this button again.



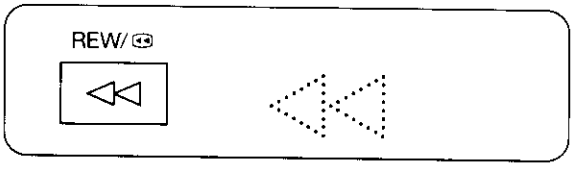
④ Cue Playback

When the Fast Forward ▶▶/Cue ▶▶ Button is kept pressed while the VTR is in the playback mode, the tape will be played back at high speed in forward direction.



⑤ Review Playback

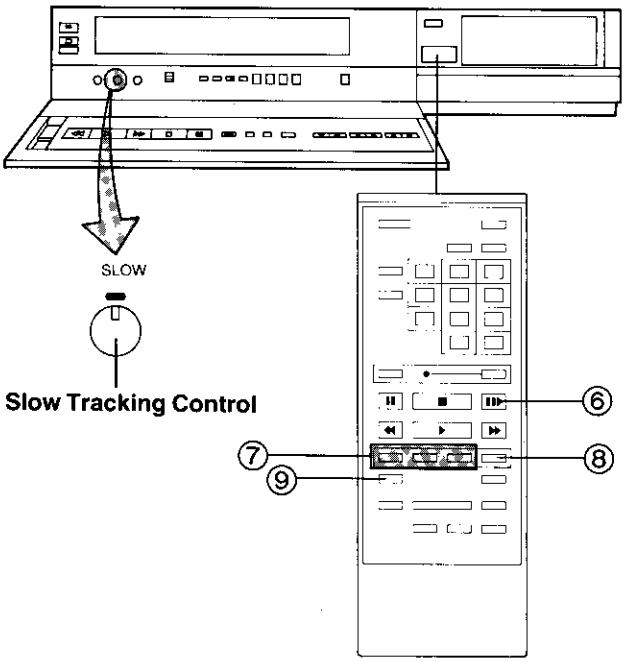
When the Rewind ◀◀/Review ◀◀ Button is kept pressed while the VTR is in the playback mode, the tape will be played back at high speed in reverse direction.



To make possible Cue or Review playback without having to keep the respective button pressed, first press the Memory/Search Button so that the Search Indicator "S" appears in the Multi-Function Display, and then press the Fast Forward ▶▶/Cue ▶▶ Button or the Rewind ◀◀/Review ◀◀ Button.
To switch the VTR back to normal playback, press the Play Button (▶).

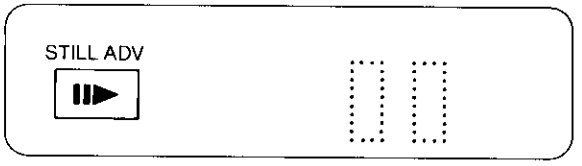
- When "S" Mark in the Multi-Function Display is lit, the Digital Function Buttons cannot be operated. If you want to use the Digital Function, press the Memory/Search button (the "S" Mark will disappear).
- When the search function is cancelled by pressing the Stop Button, the screen will be in the 3-Screen Multi Select mode (explained on page 25). In this case, press the Memory/Search Button to cancel the 3-Screen Multi Select mode and return to the normal full-screen mode (the "S" Mark will disappear).
- When Cue or Review playback continues for more than 10 minutes, the VTR will automatically switch back to the normal playback mode.

PLAYBACK BY USING THE REMOTE CONTROLLER



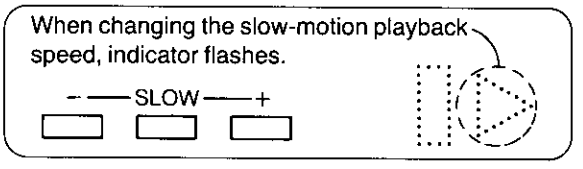
⑥ Super Still Advance Playback

Press the Still Advance Button (II▶) while the VTR is in the still playback mode. Each time you press this button, the still-picture will advance one single field.



⑦ Double Super Fine Slow Playback

During normal playback, the Slow-motion playback can be activated by pressing the Slow Button. The slow-motion playback speed can then be varied by using the Slow "+" or "−" Button.



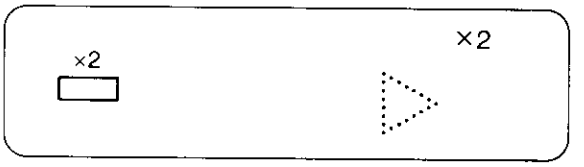
- Press the Play Button (▶) to continue the normal playback.
- If the Slow playback operation continues for more than 5 minutes, the VTR automatically switches over to the stop mode.
- While playing back a tape in the Super Still or Double Super Fine Slow playback mode on a TV set equipped with an automatic vertical hold control, the picture may shake vertically. In this case, set the TV set's vertical hold (Auto/Manual) selector to the "Manual" position, and adjust the vertical hold control.

Slow Tracking Control

- When noise bars appear during Super Still, Super Still Advance or Double Super Fine Slow playback, switch over to slow playback and adjust the Slow tracking Control to reduce the noise bars.
- It may not be possible to eliminate the noise bars completely.

⑧ Double Speed Playback

When the VTR is in the playback mode, press the Double Speed Playback Button to view the action at twice the normal playback speed. To change back to normal playback, press the Play Button.



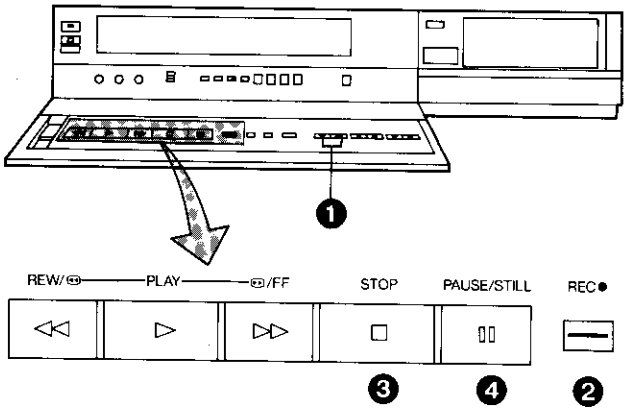
⑨ Reverse Playback

When the VTR is in the playback mode, switching over to Reverse Playback is possible by pressing the Reverse Playback Button.

- During Reverse Playback, noise bars may appear in the upper centre and lower centre parts of the picture.

- The sound will be played back only during normal playback.
- If you leave the VTR in the still playback mode for more than 5 minutes, the VTR will automatically switch over to the Stop mode to protect the tape and the video heads.
- Noise which takes the form of horizontal bars appears on the TV in the Cue and Review playback modes. This is not an indication of a malfunction.
- The top of the picture may become distorted in the Cue, Review, Still, Slow, Double Speed and Reverse mode. This is not an indication of a malfunction.
- When the picture rolls vertically in the Cue or Review mode, adjust the vertical hold control on the TV set.

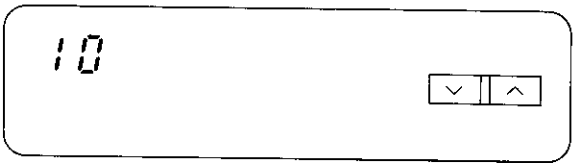
RECORDING FROM A TV BROADCAST SIGNAL



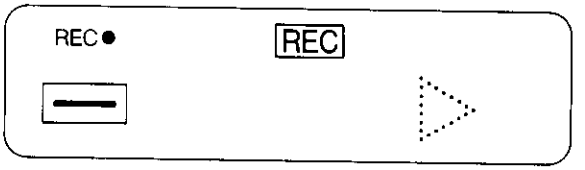
Preparation

- Make sure that the Timer Record Function is set to "Off".
- Insert a video cassette with the erasure prevention tab intact.
  When a video cassette is already inside the VTR, press the VTR On/Off Switch to turn it on.
- Reset the Tape Counter to "0:00.00".
- Press the VTR/TV Selector to "VTR" position.

❶ Select on the VTR, the programme position (channel) to be recorded. In order to confirm proper reception, turn on the TV set and select the video playback channel.



❷ Press the Record Button (●).

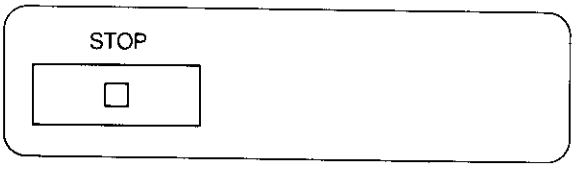


When a video cassette with broken out tab is inserted, it will be ejected automatically.

- During recording, the programme position (channel) on the VTR cannot be changed.
- To start a recording with the Remote Controller, press the two Record Buttons on the Remote Controller simultaneously.

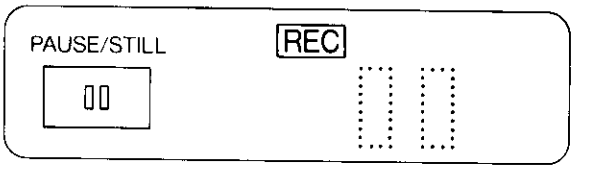
To Finish the Recording

❸ Press the Stop Button (■).



If You Wish to Avoid Recording Unwanted Material

❹ Press the Pause/Still Button (❚❚) to stop the tape temporarily.



- Press the Pause/Still Button (❚❚) again to continue the recording.
- If you leave the VTR in the pause mode for more than 5 minutes, the VTR will automatically switch over to the stop mode to protect the tape and the video heads.

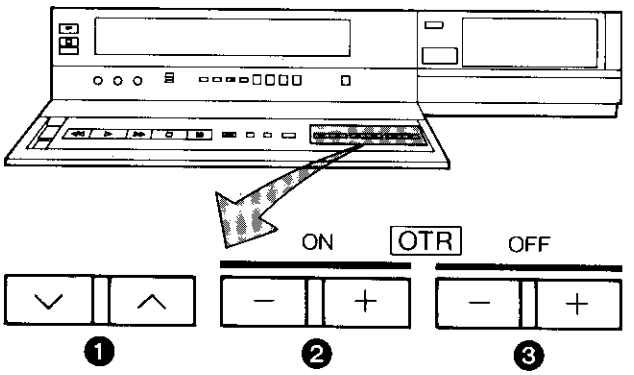
Recording One TV Programme While Watching Another

1. Record (following steps ❶ and ❷).
2. Set the VTR/TV Selector to "TV".
3. Select the desired programme position (channel) on your TV set.

- Disconnect all cables from the Video Input and Audio Input Sockets before starting the recording. If they remain connected, it is impossible to record TV programmes.

SUPER OTR FUNCTION (ONE-TOUCH TIMER RECORDING)

This convenient function makes it possible to easily programme the VTR for recording of TV programmes with immediate start or with start within 24 hours by precisely setting the starting time and ending time to the desired minute, and the VTR will automatically turn itself off when the recording ends.



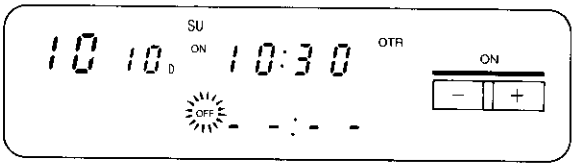
Preparation

- Make sure that the clock shows the present time correctly.
- Insert a video cassette with the erasure prevention tab intact.
  When a video cassette is already inside the VTR, press the VTR On/Off Switch to turn it on.
- Press the VTR/TV Selector to "VTR" position.

It is possible to programme an OTR recording for a TV programme which will start immediately or within the next 24 hours.
(For example, OTR recording of a TV programme broadcast from 10:30 to 11:00.)

❶ Select the programme position (channel) to be recorded.

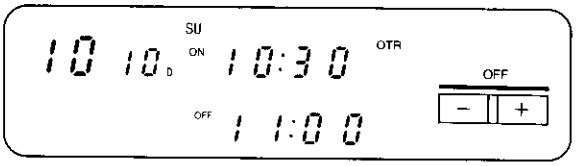
❷ Press the OTR On (+) or (−) Button to set the OTR starting time to 10:30.



When the tab of the inserted video cassette is broken out, it will be ejected automatically.

- The "OTR" indicator will be displayed.

❸ Press the OTR Off (+) or (−) Button to set the OTR ending time to 11:00.



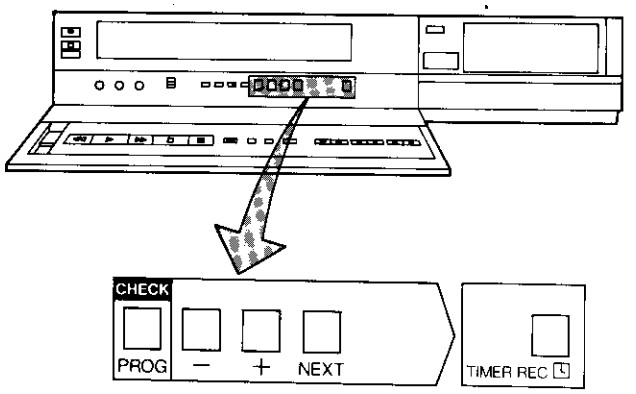
- When quickly and repeatedly pressing the OTR On (+) or (−) Button or the OTR Off (+) or (−) Button, the corresponding time indication changes in 1-minute steps. When it is kept pressed, the indication changes in 10-minute steps.
- After setting the OTR starting time in step ❷, the OTR Off (+) or (−) Button must be pressed within 8 seconds to select the OTR ending time, otherwise the selected starting time will be cancelled.
- The VTR will automatically switch off, when the OTR is completed. To turn the VTR on again, press the VTR On/Off Switch.

OTR Function with Immediate Start

Perform the operation steps ❶ and ❸.

- When the tape reaches its end during an OTR the VTR will turn itself off.
- Make sure that the OTR Function (One-Touch Timer Recording) does not overlap a programmed timer recording. An OTR always takes precedence over a timer recording.
- If you want to confirm the present time or the tape counter position before the programmed OTR is performed, or to check the tape counter position during the OTR, press the Check/Programme Button. To return the display to the previous indication, press this button once more.
- It is possible to change the OTR starting time or the ending time before the recording starts.
- It is possible to perform any VTR operation (except timer recording) until the recording starts.
- It is possible to change the OTR ending time even during the recording.
- To interrupt an OTR, press the VTR On/Off Switch to turn the VTR off.
- Disconnect all cables from the Video Input and Audio Input Sockets before starting the recording. If they remain connected, it is impossible to record TV programmes.

TIMER RECORDING



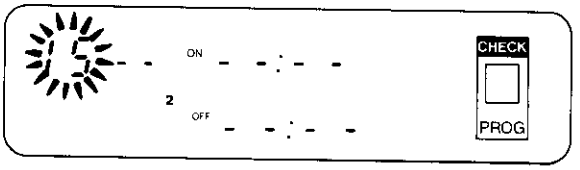
Preparation

- Make sure that the clock shows the present time correctly.
- Make sure that the VTR is turned on.
- Make sure that the Timer Record Function is set to "Off".
- Insert a video cassette with the erasure prevention tab intact.
  When a video cassette is already inside the VTR, press the VTR On/Off Switch to turn it on.
- Press the VTR/TV Selector to "VTR" position.

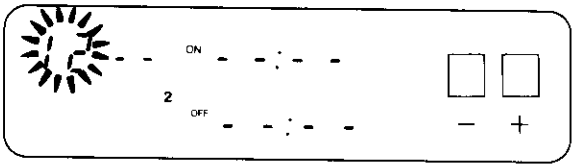
For Example:

Programming a timer recording for a TV programme that will be broadcast on Wednesday, October 27, from 10:30 to 11:45, on programme position (channel) 12, on timer programme number 2. (Present date=October 10, 1999)

❶ Press the Check/Programme Button to select the next unoccupied timer programme number.

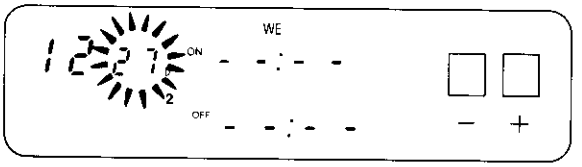


❷ Press the (+) or (–) Button to select the programme position (channel) on which the TV programme will be broadcast.



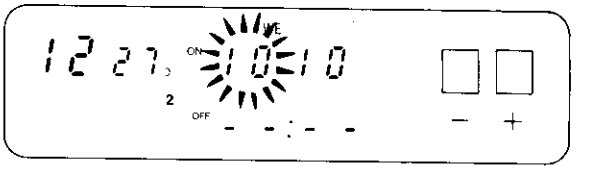
❸ Press the Next Button.

❹ Press the (+) or (–) Button to set the date.



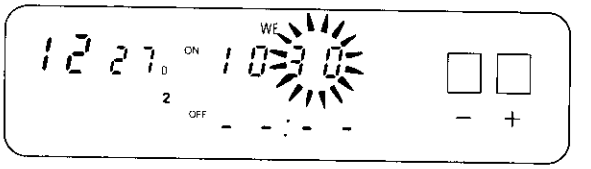
❺ Press the Next Button.

❻ Press the (+) or (–) Button to select the hour of the starting time of the TV programme.



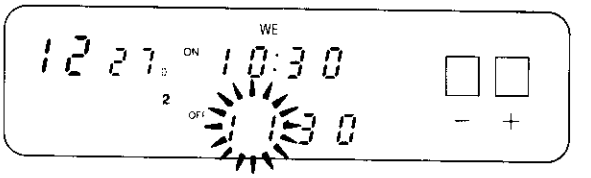
❼ Press the Next Button.

❽ Press the (+) or (–) Button to select the minute of the starting time of the TV programme.



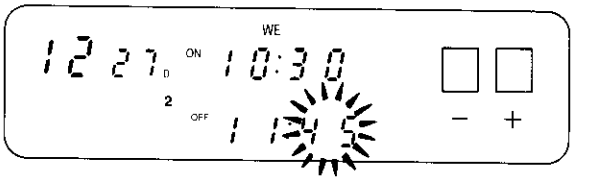
❾ Press the Next Button.

❿ Press the (+) or (–) Button to select the hour of the end time of the TV programme.

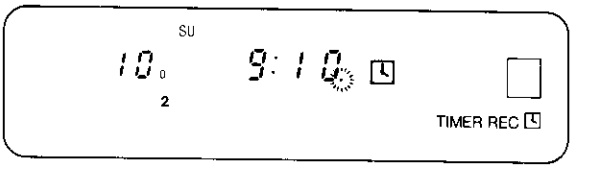


⓫ Press the Next Button.

⓬ Press the (+) or (–) Button to select the minute of the end time of the TV programme.



⓭ Press the Timer Record Button.



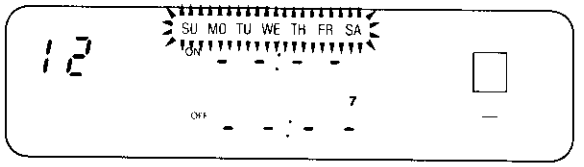
- Disconnect all cables from the Video Input and Audio Input Sockets before starting the recording. If they remain connected, it is impossible to record TV programmes.

For Everyday Recording

For example:
Programme time for timer recording every day from 10:30 to 11:45 on timer programme number 7.
Programming for everyday recording can be made on any of the timer programme numbers 1–7.

Execute the operation steps ❶ to ❸ as described on page 18.

❹ Press the (−) Button once, so that all day indications will appear together.

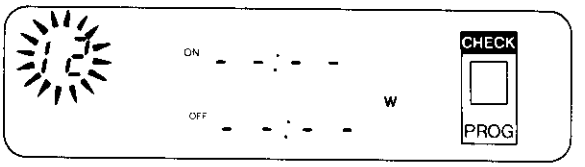


Perform the operation steps ❺ to ⓭ described on page 18.

For Everyweek Recording

For Example:
Programming a timer recording for a TV programme that is broadcast every week on Sunday, from 10:30 to 11:45.

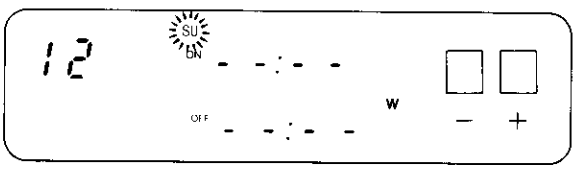
① Press the Check/Programme Button until "W" is displayed.



② Press the (+) or (−) Button to select the programme position (channel) on which the TV programme will be broadcast.

③ Press the Next Button.

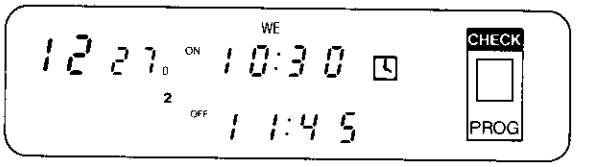
④ Press the (+) or (−) Button to select the day of the week, on which the programme will be broadcast.



Perform the operation steps ❺ to ⓭ described on page 18.

To Confirm the Programme of a Timer Recording

Select the programme number to be checked, by repeatedly pressing the Check/Programme Button.
The preset channel and start and ending times of the timer recording will be indicated for about 8 seconds.
When the Timer Record Function is set to "Off", they will be indicated for about 25 seconds.



To Cancel a Timer Recording

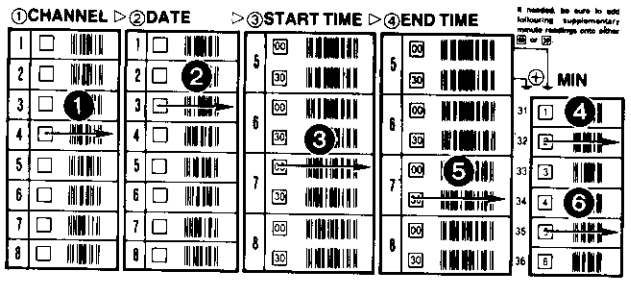
Make sure that:
the VTR is turned on,
the Timer Record Function is set to "Off".

❶ Press the Check/Programme Button repeatedly, until the number of the timer programme that you want to cancel is displayed.

❷ Press the (+) and (−) Button simultaneously for more than 3 seconds.

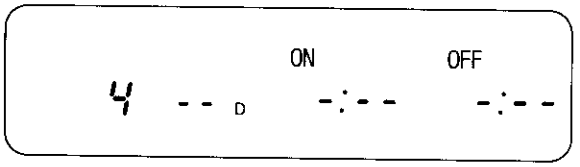
- It is impossible to confirm programmes of timer recordings while an OTR is being performed.
- To turn the VTR on and use it for playback or recording before the timer recording is performed, set the Timer Record Function to "Off".
- When the Timer Record Function is set to "On" but no video cassette is inserted or no timer recording has been programmed, the Timer Recording Indicator will flash to inform that the timer recording cannot be performed.
- After the programmed timer recording has been made, set the Timer Record Function to "Off", otherwise the VTR cannot be operated normally.
- During recording, the programme position (channel) on the VTR cannot be changed.
- When you want to watch TV after setting a timer recording, select the desired channel on the TV set.
- To cancel a timer recording during recording, set the Timer Record Function to "Off".

Tracing the Bar Codes

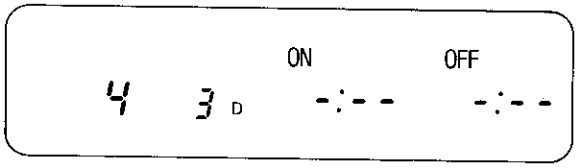


Example: When programming a timer recording for a programme that will be broadcast on channel position 4 on the 3rd of the month, from 7:02 to 7:35, trace the bar codes in the order of the numbered arrows shown below.

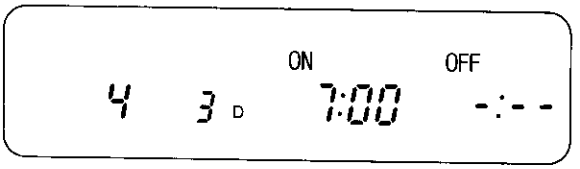
❶ Trace the bar code for "CHANNEL".



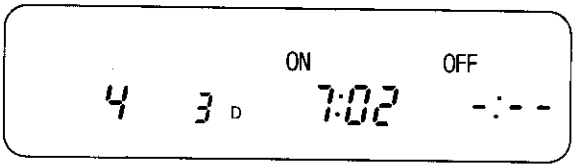
❷ Trace the bar code for "DATE".



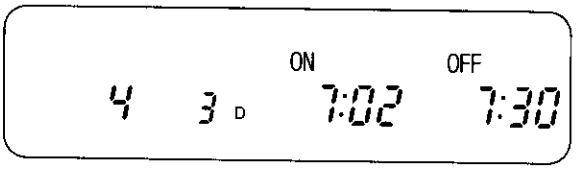
❸ Trace the bar code for "START TIME".



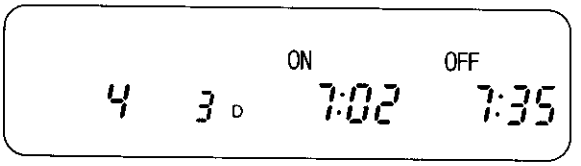
❹ Trace the bar code for "+MIN".



❺ Trace the bar code for "END TIME".



❻ Trace the bar code for "+MIN".

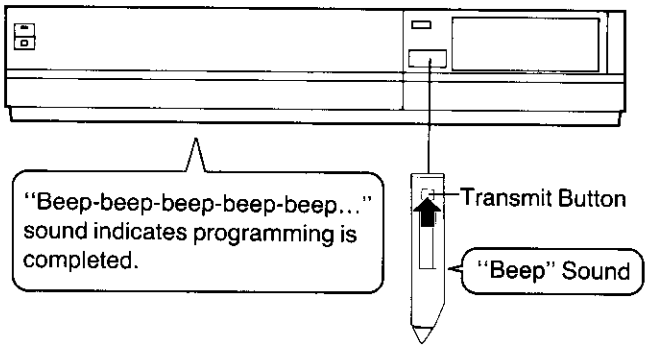


- When setting to a minute between 1 and 29, trace the appropriate "+MIN" bar code after tracing the 00 bar code.
- When setting to a minute between 31 and 59, trace the appropriate "+MIN" bar code after tracing the 30 bar code.

- The "Bee Bee Bee Bee Beeeeep" sound signals that the scanner is now ready for data transmission.
- When a timer bar code with 00 or 30 minutes is traced for the end time, the "Bee Bee Bee Bee Beeeeep" sound which indicates reading completion is heard. When subsequently tracing a "+MIN" bar code after tracing 00 or 30 to choose another minute setting, the reading completion sound will be heard again.
- When no sound is heard, read the bar codes once again.
- If more than one bar code is read in the same group, only the last code will be effective.
- The bar codes for the time from "0:00" (midnight) to "4:59" in the morning are on the back of the Programming Sheet.
- If the "CANCEL" bar code is read, all bar codes that have been read so far will be cancelled.

Transmit the Programming Data

Keep pressing the Transmit Button and confirm that the programmed data on the Multi-Function Display of the VTR are as desired.
After releasing the button, the data will continue to be displayed for about 12 seconds.

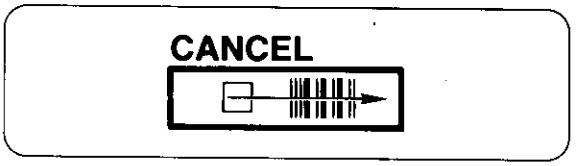


- If the transmission was not received correctly, the "Beep-Beep, Beep-Beep" sound from the VTR will warn you. In this case, perform transmission again.
- The transmission is possible when the VTR is turned on but is not in any of the recording or playback operation modes. It is also possible when the VTR is in the timer recording standby mode (⏲ indication is lit).
- The programming will be done on the next lower unoccupied timer programme number (7–1).
- If all programme numbers are occupied, the "Beep-Beep, Beep-Beep" sound from the VTR will warn you that the programming cannot be made.
- When the Transmit Button is pressed, the VTR will automatically be put into the timer recording standby condition and the VTR will be turned off.
- To operate the VTR before the timer recording will be performed, press the Timer Rec. Button to suspend the timer recording standby condition. After using the VTR, be sure to press the Timer Rec. Button again, otherwise the timer recording will not be made.

For Programming More than One Timer Recording in Succession

Repeat the following operation steps ❶–❸.

❶ Trace the "CANCEL" bar code on the Programming Sheet.



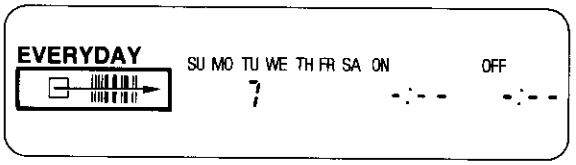
❷ Trace the bar codes for "CHANNEL", "DATE", "START TIME" and "END TIME"

❸ Confirm that the present time is displayed on the Multi-Function Display of the VTR, and transmit the data.
- If the next timer programming data are transmitted while the previous timer programmming data are still being displayed, the displayed timer recording data will be cancelled.

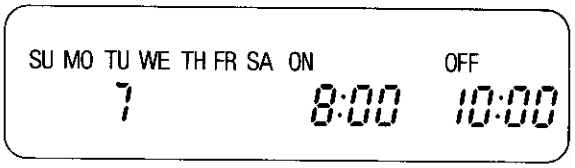
For Everyday Recording

① Turn on the Digital Scanner and trace the "CHANNEL" bar code.

② Trace the "EVERYDAY" bar code.



③ Trace the "START TIME" and then the "END TIME" bar codes, and transmit the data to the VTR.

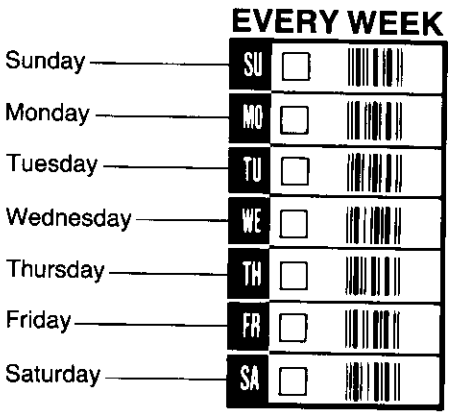


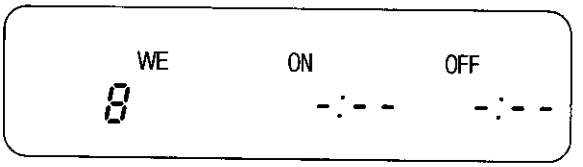
- Everyday recording will be performed from that day on.
- If a "DATE" bar code is traced after tracing the "EVERYDAY" bar code, everyday recording will not be performed.

For Everyweek Recording

① Turn on the Digital Scanner and trace the "CHANNEL" bar code.

② Trace the bar code for the desired day of the week among the "EVERYWEEK" bar codes.





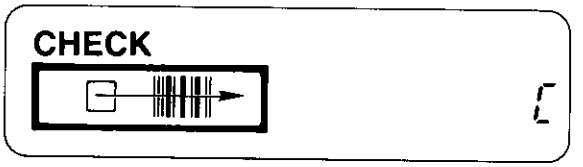
③ Trace the "START TIME" and then the "END TIME" bar codes, and transmit the data to the VTR.

- Everyweek recording will be performed from that week on.
- If a "DATE" bar code is traced after tracing the "EVERYWEEK" bar code, everyweek recording will not be performed.

To Confirm the Programme of a Timer Recoring

To perform this operation, the VTR must be turned on or it must be in the timer recording standby mode (⏲ indication is lit).

❶ Trace the "CHECK" bar code.



❷ Perform transmission.
- After releasing the Transmit Button, the programmed data will be displayed for about 8 seconds (for about 25 seconds, if the ⏲ indication is not lit) on the Multi-Function Display.
- At every push of the Transmit Button, the timer programme number advances to the next higher number.

To Cancel a Programmed Timer Recording

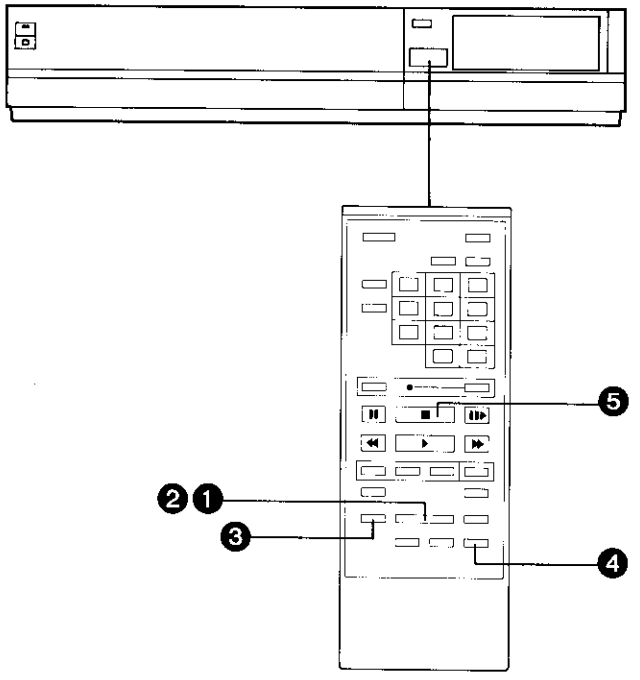
To perform this operation, the VTR must be turned on but not be in any of the recording or playback operation modes, or it must be in the timer recording standby mode (⏲ indication is lit). To cancel a programmed timer recording, its data must be displayed on the Multi-Function Display. If they are no longer displayed, first, trace the "CHECK" bar code and perform transmission (several times, if necessary, until the programme you want to cancel is displayed). Then, within 8 seconds (within 25 seconds, if the ⏲ indication is not lit):

① Trace the "CANCEL" bar code.

② Perform transmission.
- To programme a new timer recording, perform the programming from the beginning.

DIGITAL SPECIAL EFFECTS

The special digital picture effects can be enjoyed by using the Remote Controller.



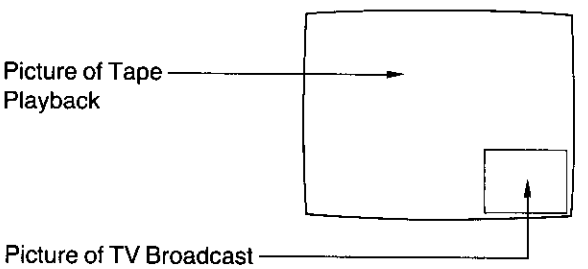
Picture-in-Picture

This function makes it possible to watch a TV programme while playing back a tape.

- The Picture-in-Picture function works in any of the playback functions: normal playback, Cue, Review, Still and Slow.

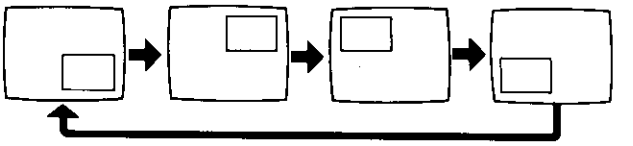
❶ When the P in P Button is pressed during playback of a tape, a small picture of the TV channel selected on the VTR appears in the bottom right corner of the screen.

- Only the sound of the large picture is reproduced.



- The TV channel can be changed with the Programme Position Selector Buttons either on the Remote Controller or on the VTR itself.

❷ By pressing the P in P Button repeatedly, the position of the small picture can be changed as follows.



❸ By pressing the ◧ / ◨ Button, the large picture can be changed into the small one and vice versa.

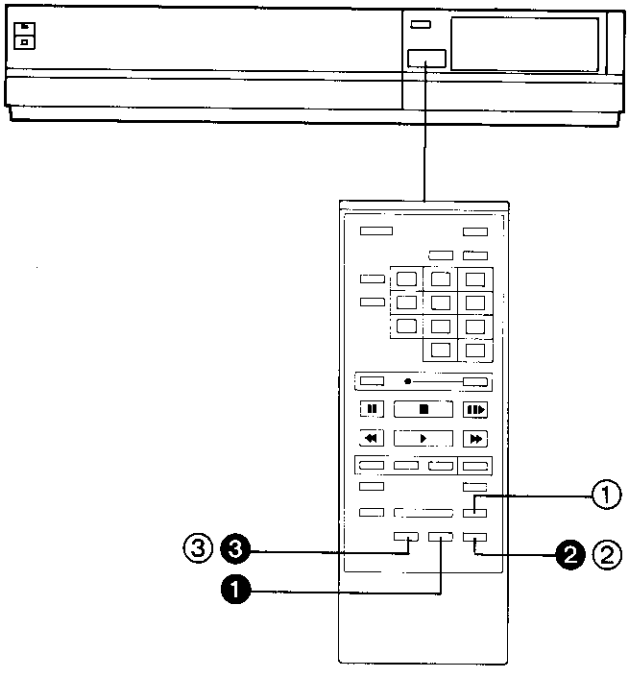
- Depending on the TV set used, there may be some momentary picture distortion when they are exchanged.

❹ To return to the normal (single-picture) playback, press the CLEAR Button.

❺ To watch the TV broadcast alone on the whole screen, press the STOP Button.

- When the 3-SCREEN Button is pressed during the Picture-in-Picture playback, the small picture will be displayed in the 3-Screen Multi Select mode.
- When the F. STORE Button is pressed during the Picture-in-Picture playback, the small picture will be displayed in the ¼-Screen Frame Store mode.

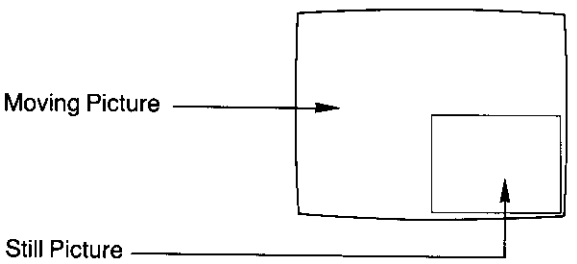
DIGITAL SPECIAL EFFECTS (CONT'D)



¼-Screen Frame Store

This function can be used to freeze the action at any desired moment and superimpose it as a still picture in ¼-screen size onto the moving playback picture. The reproduction of the sound of the moving picture (full screen) will continue normally. In addition to the playback of video tapes, this ¼-Screen Frame Store function can also be used for TV broadcasts (received with the TV tuner in the VTR) as well as for pictures input from an external source.

❶ When the F. STORE Button is pressed, a still-picture of that moment's action will appear in the bottom right quarter of the screen.



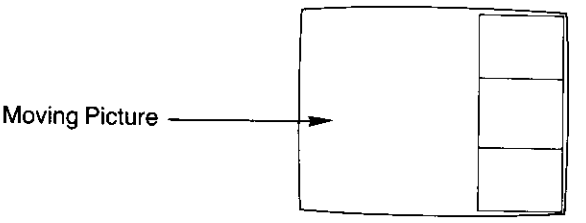
- Every time the F. STORE Button is pressed, the moving picture of that moment will be displayed as a still-picture.
- When this button is kept pressed, still pictures taken at half-second intervals will be displayed for a strobe-like effect.

❷ To return to the former condition (single-picture playback or TV broadcast), press the CLEAR Button.

❸ If the RECALL Button is pressed, the screen will return to the condition before the CLEAR Button was pressed.

3-Screen Multi Select

① When the 3-SCREEN Button is pressed, three small pictures frames will appear on the right side of the screen and can be filled with still-pictures from top to bottom.



- Press the 3-SCREEN Button successively at the scenes which you want to display as still-pictures. The still-pictures will be displayed and updated from top to bottom.
- When this button is kept pressed, the still-pictures will be displayed in 0.3-second intervals.

② To return to the former condition (single-picture playback or TV broadcast), press the CLEAR Button.

③ If the RECALL Button is pressed, the screen will return to the condition before the CLEAR Button was pressed.

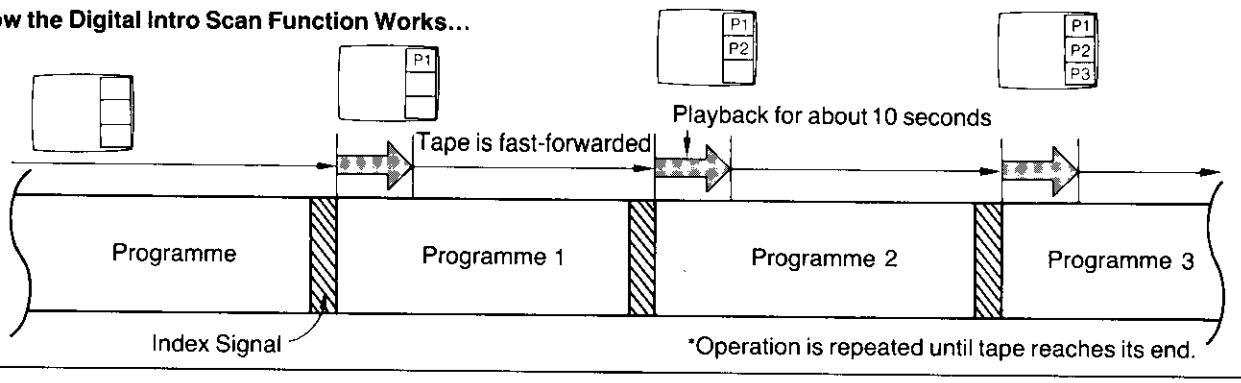
- When "S" Mark in the Multi-Function Display is lit, the digital function buttons cannot be operated. If you want to use the Digital Functions, press the Memory/Search button (the "S" Mark will disappear).

About the Superimposed Small Pictures

- The picture may vibrate vertically, be distorted and the colour may be unstable. However, this is not due to any malfunction.
- Depending on the type of TV set used, the small pictures may not display the full picture content.
- When the moving picture is in black-and-white, the small pictures are also in black-and-white.
- When the special playback signals (Cue, Review, Still, Slow etc.) are being input from another VTR, the small picture may be distorted.

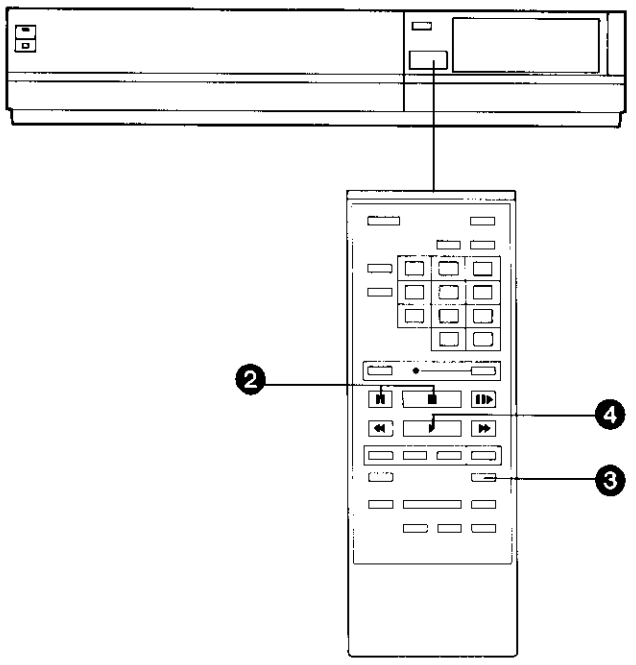
DIGITAL INTRO SCAN FUNCTION

How the Digital Intro Scan Function Works...



The Intro Scan function plays back the first 10 seconds of each programme (marked by an index signal) on a tape one after another on the full screen. The first picture of each of these 10-second segments is then frozen and displayed as a still-picture in the 3-Screen Multi Select mode on the right side of the TV screen from the top to the bottom.

Convenient Digital Intro Scan Operation with the Remote Controller



❶ Insert a video cassette on which index signals are recorded.

❷ Put the VTR in the stop mode or the still playback mode.

❸ Press the Intro Scan Button.
(The blank three small pictures will appear on the right of the screen, "S" mark will light up in the Multi-Function Display, and the Digital Intro Scan will start.)

❹ When the desired scene is reached, press the Play Button.
- If you want to use the Digital Function after that, press the Memory/Search Button (the "S" Mark will disappear).

Digital Intro Scan Operation on the VTR

① Insert a video cassette.
(Put the VTR in the stop mode.)

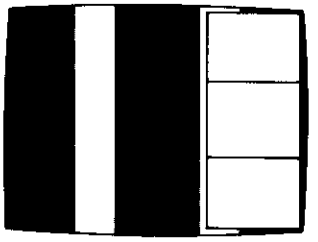
② Press the Memory/Search Button twice.
(The blank three small picture appears on the right of the screen and "S" mark appears.)

③ Press the Fast Forward ▶▶/Cue ⏩ Button.
(The Intro Scan starts.)

④ When the desired scene is reached, press the Play Button.
- If you want to use the Digital Function after that, press the Memory/Search Button (the "S" Mark will disappear).

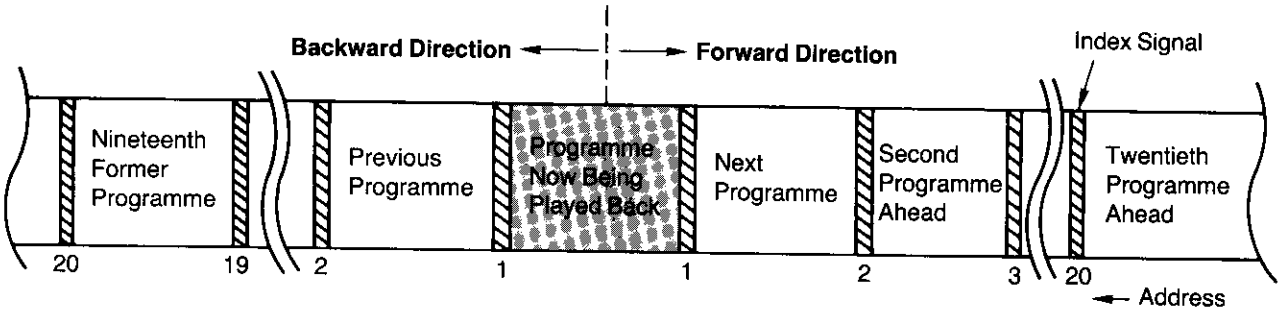
- The Intro Scan function may not be activated for the first programme recorded close to the beginning of the tape.
- During the Intro Scan, if there is a portion without any recording on the tape, the Intro Scan function will be activated at that position to play back the tape for about 10 seconds, and the Intro Scan will then continue.
- The Intro Scan function may not be activated, if the interval between programme starts is less than 2 minutes.
- If a portion without any recording on the tape continues for more than about 50 minutes, the Intro Scan function will be cancelled and the playback will start.

- During the Digital Intro Scan, if there is no input signal (from line input or tuner), the VTR will automatically be in same condition as the Test Signal Switch is "ON" and the small pictures will be in black-and-white.

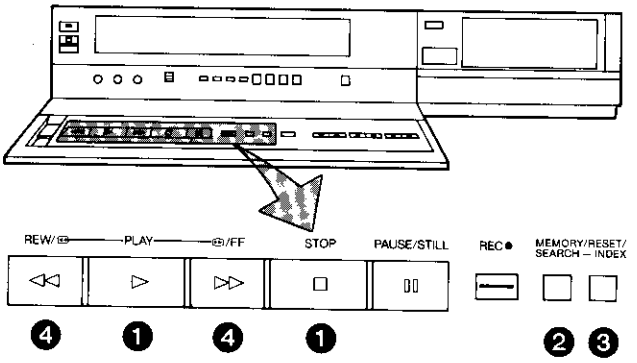


VHS INDEX SEARCH SYSTEM

How to Count the Addresses

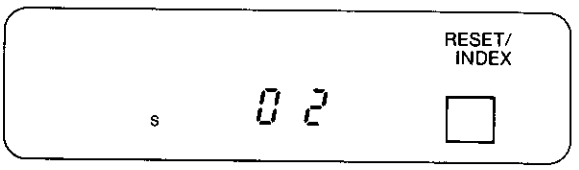


With the Index Search function, up to 20 addresses (places where an index signal is recorded) can be skipped to directly locate the beginning of the desired programme in forward or reverse direction in the Fast Forward or Rewind mode.



A special index signal (for use of the VHS Index Search function) is automatically recorded every time the Record Button is pressed. If you want to record an additional index signal during the recording of a programme, press the Record Button again at the desired point.

1. Press the Play Button (▶) or Stop Button (■).
2. Press the Memory/Search Button twice.
   - The indication "S" appears on the Multi-Function Display.
3. Repeatedly press the Reset/Index Button to select the desired address.
   The number of the selected address is shown on the Multi-Function Display.



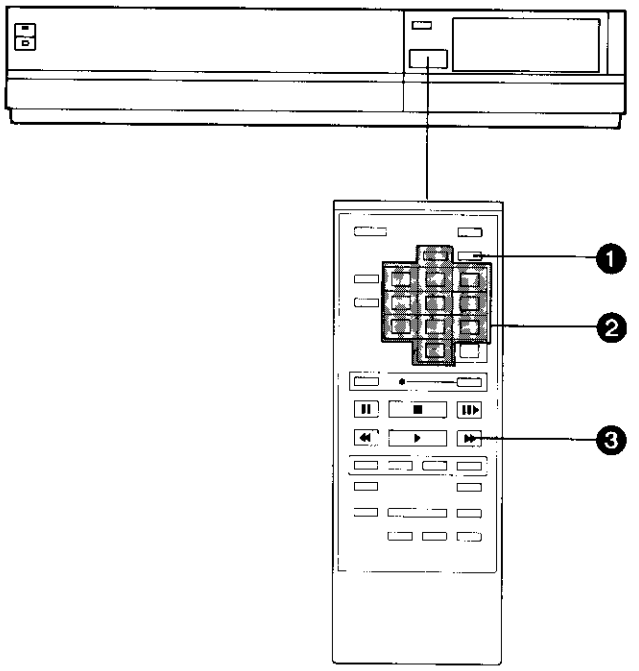
4. Press the Rewind ◀◀/Review ⏪ or Fast Forward ▶▶/Cue ⏩ Button to start the VHS Index Search function (the VTR will switch to the rewind or fast-forward mode).

- Every time an index signal (address) is skipped the number in the Address Indication decreases by one.
- When the preset address is reached, the Tape Counter Indication will appear in place of the Address Indication, and the normal playback will start on other VTRs which do not have this function.
- To abort the Index Search function midway, press the Play or the Stop Button.

- If the recording is stopped temporarily by pressing the Pause Button and is later resumed the index signal will not be recorded at that position.
- It is impossible to record only index signals onto a tape that has already been recorded.
- If a tape position without any recording is passed during the Index Search function, that position may be counted as an address.
- The Index Search function can only count the addresses correctly, if the index signals are spaced at least 2 minutes.
- If the Index Search function is started extremely close to the beginning of the next programme (address) or from the beginning of the tape, the first address may not be counted.
- If you want to use the Digital Function after searching desired programme, press the Memory/ Search Button (the "S" Mark will disappear).

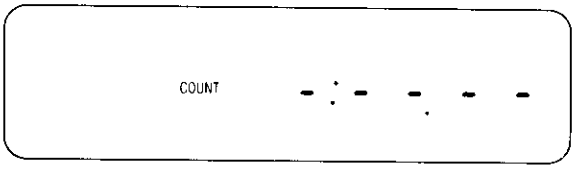
TIME SEARCH

It is possible to locate the desired scene directly by inputting the hour, minute and second of that scene.

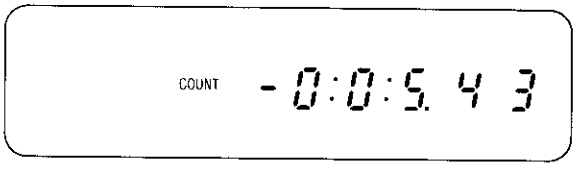


Put the VTR in Stop mode.

❶ Press the Time Search Button.
The indication in the Multi-Function Display changes as shown below.



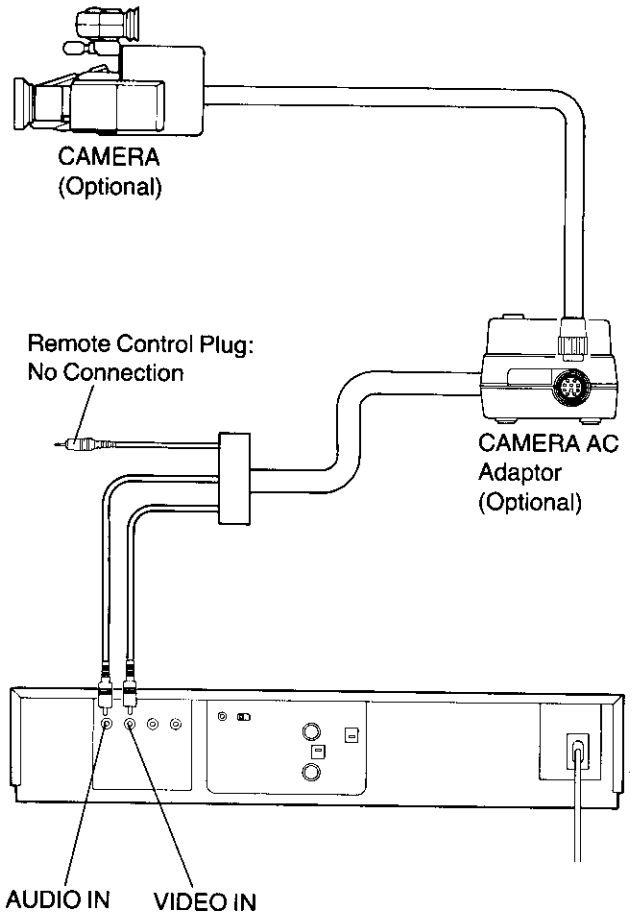
❷ Input the time of the desired scene.
- The time is input by pressing the number buttons in the order: hour, minute, second.
- The "–" indicatioin will be counted as "0".
- If you want to input an earlier time than "0:00.00", press the +/– Button so that the "–" indication appears ahead of the counter indication.



❸ Press the Fast Forward ▶▶/Cue ⏩ Button.
- The VTR automatically judges whether the tape should be fast-forward or rewound and performs the appropriate operation.
- When the designated time is reached, the playback starts.

- The numbers in the Tape Counter do not change during parts of the tape on which there is no recording.
- When the tape is ejected, the Tape Counter will automatically be reset to "0:00.00".

CAMERA RECORDING

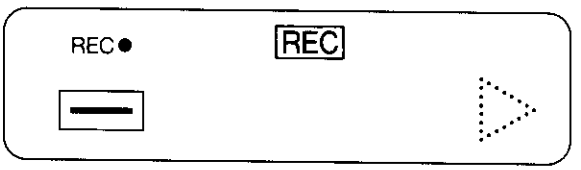


Preparation

- Connect the Video Camera via the Camera AC Adaptor to the VTR as shown in the illustration above.
- Insert a video cassette with the erasure prevention tab intact.
  When a video cassette is already inside the VTR, press the VTR On/Off Switch to turn it on.
- Make sure that the Timer Record Function is set to "Off".
- Press the VTR/TV Selector to "VTR" position.

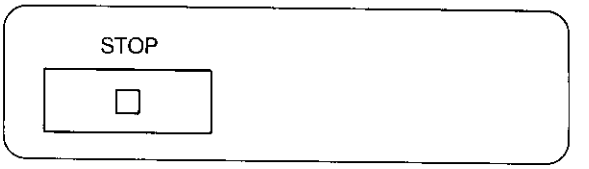
❶ Turn the Camera AC Adaptor on and make the necessary adjustments on the camera.
Refer to the operating instructions of the camera you are using.

❷ Press the Record Button (●) on the VTR to start recording.



Avoid recording unwanted material:
Press the Pause/Still Button (❚❚) of the VTR, and the recording will stop temporarily. To restart recording, press the Pause/Still Button (❚❚), again.

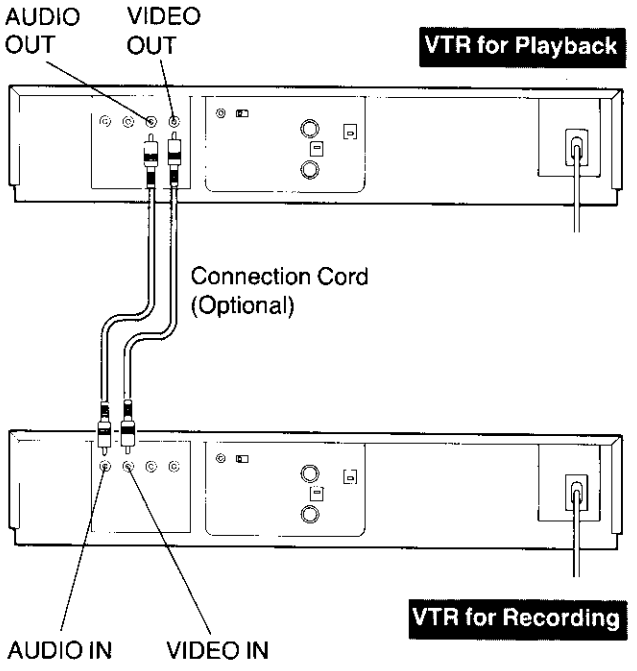
❸ Press the Stop Button (■) on the VTR to stop the recording.



- If you leave the VTR in the pause mode for more than 5 minutes, the VTR will stop automatically to protect the tape and the video heads.
- Even if the video camera is equipped with video recorder remote control functions, this VTR can not be remote-controlled from the camera.
- Disconnect all cables from the Video Input and Audio Input Sockets after finishing camera recording.
  If they remain connected, it is impossible to record TV programmes.

DUBBING (COPYING)

Dubbing (copying) from one video cassette to another.



Preparation

- Press the VTR On/Off Switches to turn both VTRs on.
- Make the necessary connections as shown in the connection diagram.
- Make sure that the Edit Switches of both the recording and playback VTRs (if equipped) are in the "On" position. Set these switches to "Off" for ordinary use of the VTRs. (The Edit Switch is on the front panel.)

❶ Place the recorded cassette in the playback VTR and a blank video cassette with the erasure prevention tab intact in the recording VTR.

❷ Press the Record Button (●) on the recording VTR.

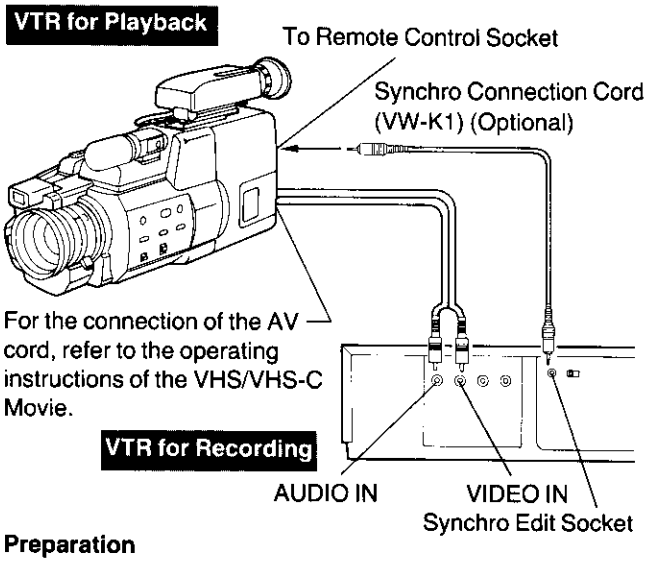
❸ Press the Play Button (▶) on the playback VTR.

❹ Press the Stop Button (■) on both VTRs to stop the dubbing.

- To assure smooth, noiseless cuts when interrupting the recording, always use the Pause/Still Button (❚❚).
- To obtain smooth cuts when starting the recording from the stop mode:
  1. Play back the last part of the previously recorded material to confirm its ending point, and then press the Pause/Still Button (❚❚).
  2. Press the Record Button (●). (The VTR is still in the pause mode.)
  3. To start recording, press the Pause/Still Button (❚❚) again.
- The picture quality of a re-recorded tape is not as good as that of the original.
- Disconnect all cables from the Video Input and Audio Input sockets after finishing the recording. If they remain connectd, it is impossible to record TV programmes.

Connecting to a VHS/VHS-C Movie Equipped with Synchro Edit Function

It is possible to synchronize the playback start and stop of the VHS/VHS-C Movie with the recording start and stop of this VTR.



Preparation

- Make the necessary connections as shown in the connection diagram.
- Set the Edit Switch on both the VHS/VHS-C Movie and on this VTR to "ON".

❶ Put this VTR in the recording pause mode.

❷ Put the VHS/VHS-C Movie in the still playback mode.
- Put the Movie at the point where you want to start editing into the still playback mode.

❸ Press the Pause/Still Button on this VTR.
- The VHS/VHS-C Movie changes over to the playback mode and the editing will start automatically.

To Leave out Unwanted Scenes

① Press the Pause/Still Button on this VTR.
- The VTR changes over to the recording pause mode and the VHS/VHS-C Movie changes over to the still playback mode.

② Operate the VHS/VHS-C Movie to skip the unwanted scenes and then put it in the still playback mode again.

③ Press the Pause/Still Button on the VTR.
- The editing will be restarted.

To stop the editing, press the Stop Button on the VTR and then put the VHS/VHS-C Movie in the stop mode.

BEFORE REQUESTING SERVICE

Before requesting service, check the following points once again.

SYMPTOM	CAUSE	REMEDY
Power doesn't turn on.	Mains lead is not connected.	Connect mains lead to mains outlet.
	The Timer Record Function is set to "On".	Set the Timer Record Function to "Off".
Power is on but unit doesn't operate.	Dew condensation inside the VTR.	Wait until the Dew Indicator "*d*" goes off.
	Safety devices are operating.	Turn off the VTR On/Off Switch, disconnect mains cord from outlet, then reconnect mains cord to mains outlet and turn on the VTR On/Off Switch again.
TV programmes cannot be recorded.	Connection of aerial lead is not correct.	Connect aerial lead correctly.
	Reception channel is not properly tuned.	Tune reception channel.
	Cables are connected to the Video Input and Audio Input Sockets.	Disconnect all cables from the Video Input and Audio Input Sockets.
OTR Function (One-Touch Timer Recording) cannot be performed.	Clock is flashing "0:00".	Set clock to present time.
Unattended timer recording cannot be performed.	Recording start or recording stop time setting is incorrect.	Set recording start and recording stop time correctly.
	The Timer Record Function is set to "Off".	Set the Timer Record Function to "On".
	Clock shows incorrect time.	Adjust clock to present time.
	Clock is flashing at "0:00".	Set clock time and perform timer setting.
Unattended timer recording cannot be programmed.	The OTR is now being performed.	Programme the timer recording after the OTR has finished.
If you attempt to carry out Recording, Timer Recording, or OTR, the cassette will be automatically ejected.	Accidental erasure prevention tab on the cassette is broken out.	Cover tab hole with adhesive tape.
Playback picture is not reproduced.	Connection with television set is not correct.	Connect the VTR to the television set correctly.
	TV set is not tuned to the video playback channel.	Tune TV set to the video playback channel of the VTR.

SYMPTOM	CAUSE	REMEDY
Playback picture is not in colour. Playback picture has large amounts of "snow".	Reception channel was not adjusted correctly during recording.	Readjust reception channel correctly.
	TV set is not properly tuned to the video playback channel of the VTR.	Properly tune the TV set to the video playback channel of the VTR.
	The video heads are clogged with dirt.	Consult qualified service personnel.
	The video heads are abraded.	Consult qualified service personnel.
	Tape is old and/or defective.	Use new tape.
Remote Controller (Digital Scanner) does not work.	Remote Controller (Digital Scanner) is not being pointed at Infra-red Receiver Window on the VTR.	Point the Remote Controller (Digital Scanner) at Infra-red Receiver Window on the VTR.
	Distance is too far.	Use the Remote Controller (Digital Scanner) within 7 m from the VTR.
	An obstacle is between Remote Controller (Digital Scanner) and VTR.	Remove obstacle.
	Batteries are exhausted.	Replace batteries.
	Battery polarities (+, −) are reversed.	Insert batteries correctly.
Bar code reading with Digital Scanner is impossible.	The scanner is in the power-saving standby condition.	Set the Digital Scanner On/Off Switch to "OFF" and then to "ON" again.
	The bar code has been traced too slowly.	Trace the bar code quickly.
	The bar code was not traced all the way from the Small Box past the last bar.	Trace the bar code correctly.
	The bar code was not traced straight.	Trace the bar code straight from left to right.
Transmission from the Digital Scanner to the VTR cannot be performed.	The VTR is turned off.	Turn the VTR on.
	The VTR is in an operation mode.	Put the VTR into the stop mode.
	There is no unoccupied timer programme number left.	A maximum of 8 timer recordings can be programmed at the same time.
	Reading a bar code was not followed by a "beep" sound from the Digital Scanner.	Perform the bar code reading again.
	The transmission was not followed by a repeated "beep" sound from the VTR.	Keep pressing the Transmit Button until the confirmation sound is heard.

CAUTIONS

Please read these cautions before you operate this VTR.

Avoid Sudden Changes in Temperature

If the VTR is suddenly moved from a cold place to a warm place, moisture may form on the tape and inside the VTR. In this case, the Dew Indicator "$\mathcal{d}$" will flash on and off and the VTR will not operate.

Humidity and Dust

Avoid places where there is high humidity or much dust, which may cause damage to internal parts.

Do Not Obstruct the Ventilation Holes

The ventilation holes prevent abnormal increase in temperature. Do not block or cover these holes. Especially avoid covering the holes with soft materials such as cloth or paper.

Keep away from High Temperature

Keep the VTR away from extreme direct heat such as direct sunlight, heating radiators, or closed automobiles.

Keep Magnets away

Never bring a magnet or magnetized object near the VTR because it will adversely affect the performance of the VTR.

No Fingers or Other Objects Inside

Touching internal parts of this VTR is dangerous, and may cause serious damage to the VTR. Do not attempt to disassemble the VTR. There are no user serviceable parts inside.

Keep Water away

Keep the VTR away from flower vases, tubs, sinks, etc. CAUTION: If liquids are spilled into the VTR, serious damage could occur. If you spill any liquid into the VTR, consult qualified service personnel.

Cleaning the VTR

Wipe the VTR with a clean, dry cloth. Never use cleaning fluid, or other chemicals. And do not use compressed air to remove dust.

Stacking

Place the VTR in a horizontal position, and do not place anything heavy on it.

Lightning

To avoid damage by lightning, disconnect the aerial plug from the VTR.

Video Head Clogging

The video heads are the means by which the recorder places picture signals on the tape during recording, and reads picture signals from the tape during playback. If these heads become dirty and clogged from long use, the signals can no longer be recorded correctly, and the playback picture will be distorted accordingly. This is the case, for example, during the playback of a tape, the sound is reproduced normally, but no picture is seen, or the picture is greatly distorted. When such a symptom case occurs have the recorder checked by qualified service personnel.

If Dew Condensation Forms in the VTR

Condensation may form in the VTR if:

- The VTR is in a room where the heater has just been turned on.
- The VTR is in a room with steam or high humidity.
- The VTR is brought from cold surroundings into a well-heated room.
- The VTR is suddenly brought from cool surroundings, such as an air-conditioned room or car, to a place which is hot and humid.

When dew forms in the VTR: (Refer to page 5.)
The Dew Indicator "$\mathcal{d}$" on the Multi-Function Display will flash on and off and all the function buttons are made non-operational to protect the tape and the video heads.

When the Dew Indicator flashes, wait until this indicator disappears.

- If dew condensation forms inside the VTR while the VTR On/Off Switch is off, it will turn on automatically and the Dew Indicator will flash on and off. As soon as the dew condensation has been dissolved, the VTR will turn itself off again.

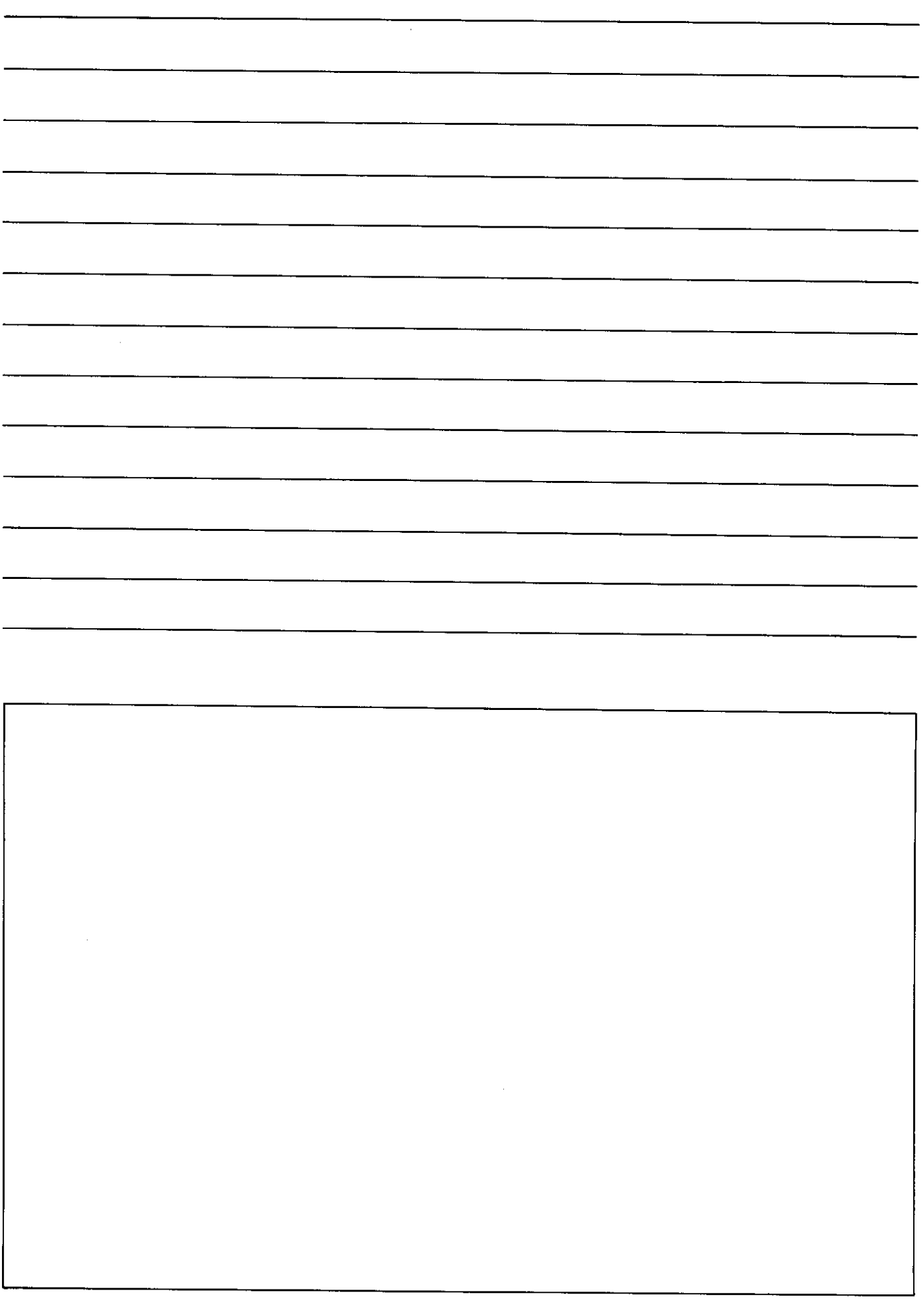
SPECIFICATIONS

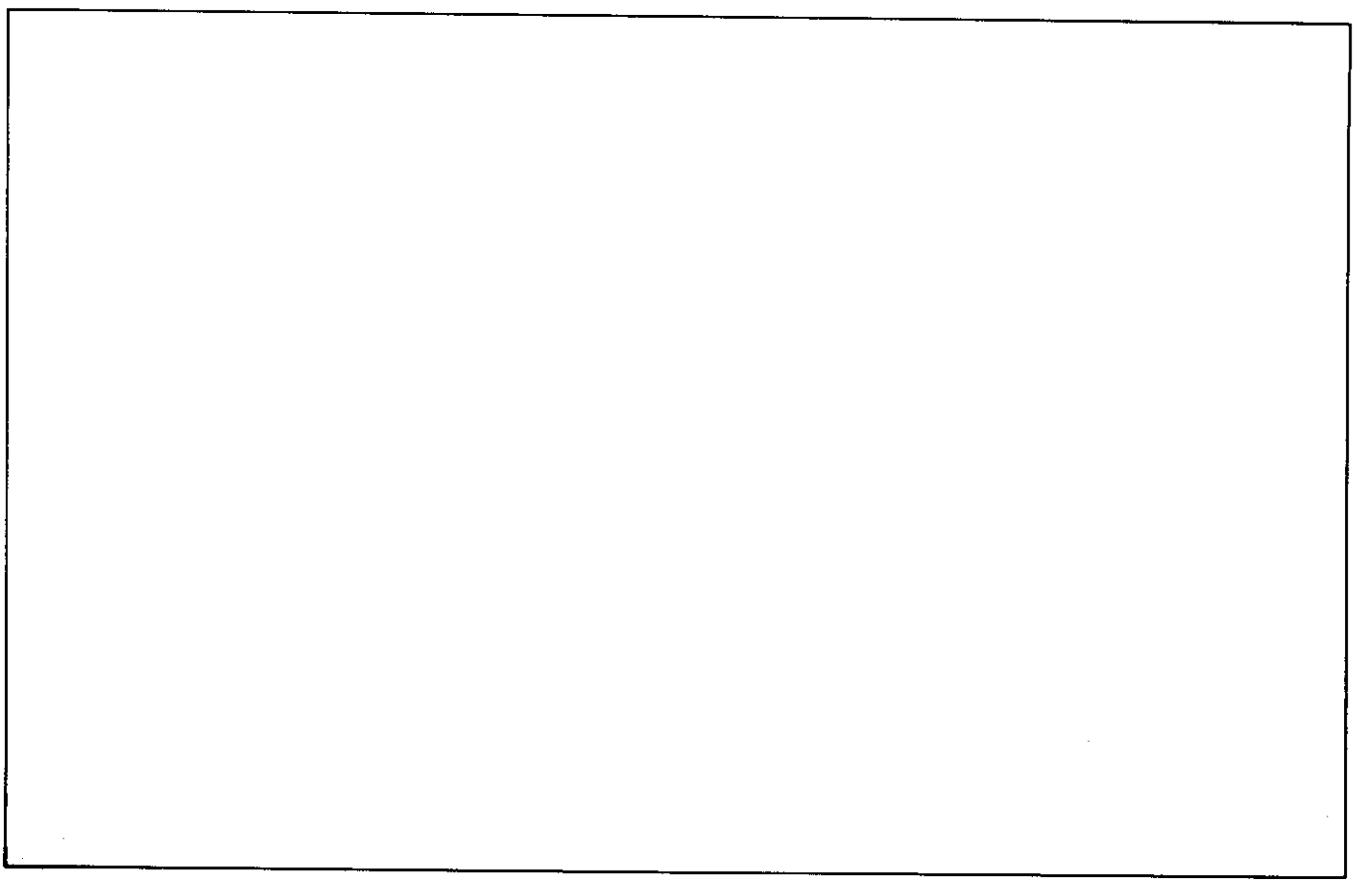
NV-D48A, EA,

Power Source:	NV-D48A; 240 V AC 50–60 Hz NV-D48EA; 230 V AC 50–60 Hz
Power Consumption:	NV-D48A; Approx. 26 watts NV-D48EA; Approx. 25 watts

Video Recording System:	2 rotary heads, helical scanning system		
Tape Speed:	23.39 mm/sec.		
Tape Format:	VHS tape		
Record/Playback Time:	240 min. with NV-E240		
FF/REW Time:	Less than 5.5 min. with NV-E180		
VIDEO			
Television System:	CCIR; 625 lines, 50 fields, PAL colour signal		
Modulation System:	Luminance; FM azimuth recording		
	Colour signal; converted subcarrier phase shift recording		
Input Level:	VIDEO IN (PHONO);	1.0 Vp-p,	75 ohm, unbalanced
Output Level:	VIDEO OUT (PHONO);	1.0 Vp-p,	75 ohm, unbalanced
	RF Modulated; NV-D48A:	VHF channel 0 or 1,	75 ohm, unbalanced
	NV-D48EA:	VHF channel 2 or 3,	75 ohm, unbalanced
AUDIO			
Input Level:	AUDIO IN (PHONO);	−10 dB,	more than 50 kohm, unbalanced
Output Level:	AUDIO OUT (PHONO);	−8 dB,	less than 1 kohm, unbalanced
Audio Track:	1 track monaural		
Video Horizontal Resolution:	Colour; more than 240 lines		
Signal-to-Noise Ratio:	Video; more than 43 dB		
	Audio; more than 43 dB		
Audio Frequency Response:	80 Hz–10 kHz		
Operating Temperature:	5°C–40°C		
Operating Humidity:	35%–80%		
Weight:	5.9 kg		
Dimensions:	430 (W)×82 (H)×357.5 (D) mm		
Standard Accessories:	1 pc. DIN-DIN Coaxial Cable		
	1 pc. Infra-red Remote Controller		
	2 pcs. "R6" size batteries		
	1 pc. Digital Scanner (with Programming Sheet)		
	4 pcs. "R03" size batteries (for Digital Scanner)		
	1 pc. AC Mains Lead		

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.





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